MITSUBISHI ELECTRIC

DLP™ Projector

VS-50XL20U, VS-67XL20U, VS-50XLW20U

Set-up and Installation Manual

October 10, 2003 (REV 1.4)

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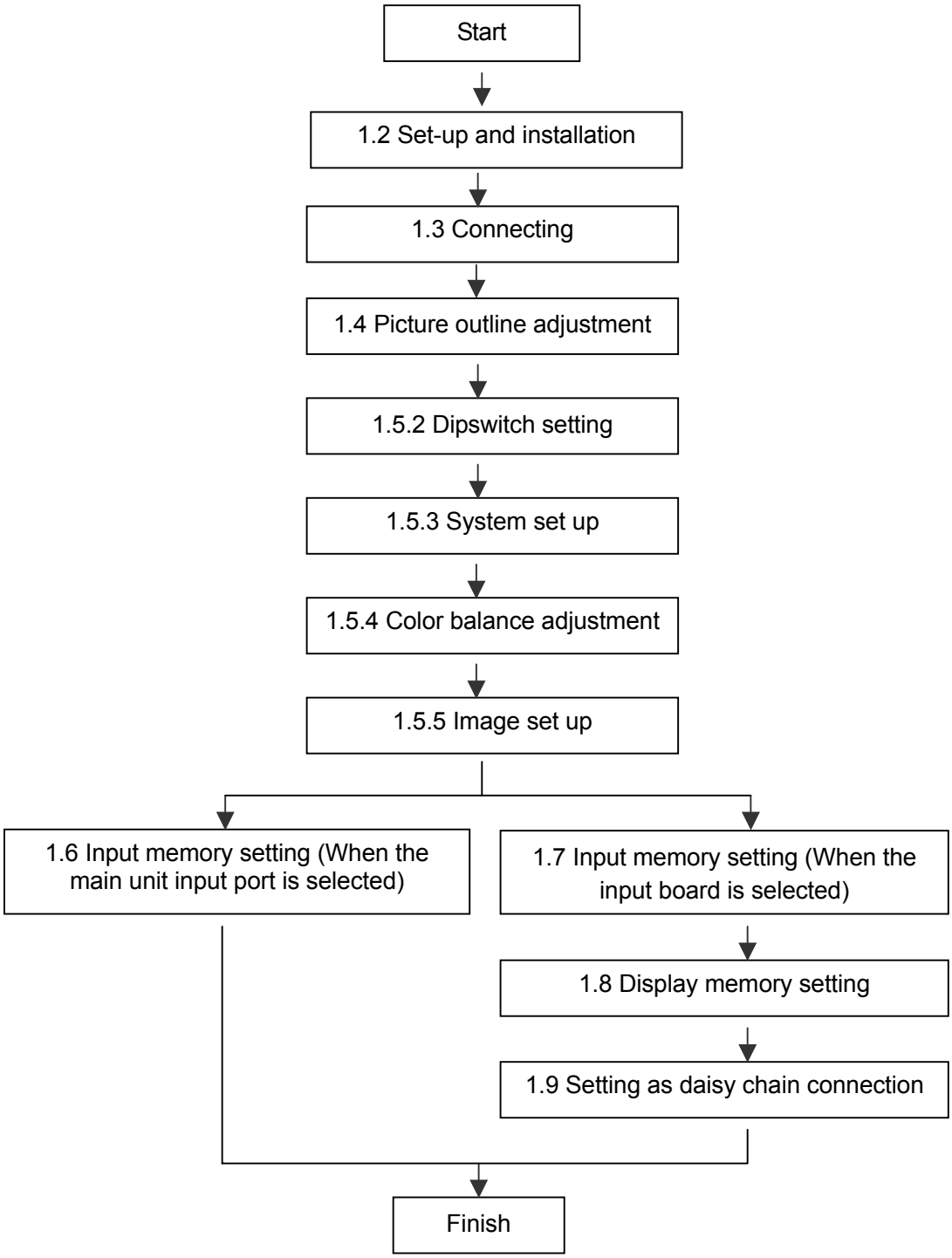
1. Set-up and installation

1.1. Flowchart


Start
1.2 Set-up and installation
1.3 Connecting
1.4 Picture outline adjustment
1.5.2 Dipswitch setting
1.5.3 System set up
1.5.4 Color balance adjustment
1.5.5 Image set up
1.6 Input memory setting (When the main unit input port is selected)
1.7 Input memory setting (When the input board is selected)
1.8 Display memory setting
1.9 Setting as daisy chain connection
Finish

1.2. Installation

1.2.1. Safety precaution

- This product requires special installation to prevent falling or toppling. This should be done by installation specialists.
- Be sure to read this manual and user's manual for your safety before starting assembly or installation.
- Be sure to use the supplied accessories for assembly or installation.
- Attach all the screws and fixtures specified in this manual securely.
- Reinforce the wall surface and floor so that it can support the total weights of the products for a long time and resist earthquakes, possible vibrations, and external forces.
- Ensure that the safety factor is more than 10 (or ensure that the total bolts can bear ten times the weight of the projectors and the brackets).
- Do not use the projector near a heater or in a humid, dusty or smoky location.
- Do not install the product with its intakes, exhaust slots and ventilation holes blocked. The unit may overheat and cause a fire or breakdown.
- Be sure that lighting or sunlight does not leak into the screens.
- Inspect the mounting fixings more than once in a year as needed.

1.2.2. Preparation

Make sure that all of the following are supplied.

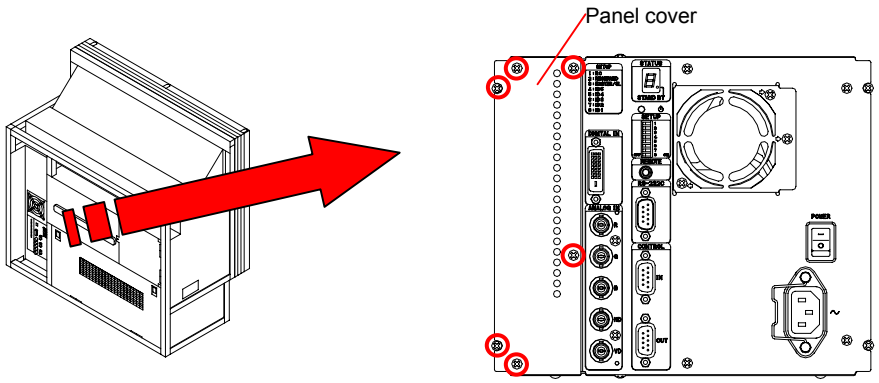
Supplied accessories (per unit)	Q'ty	Necessary tools
1. Hexagon socket head bolt (M6)	8	1. Allen wrench 2mm/4mm/5mm
2. Flat washer (for M6)	8	2. Phillips screwdriver #2
3. Spring washer (for M6)	8	3. Level
4. Joint hole seal	1	4. Stepladder
5. Power cord (1.8m) for North America and Europe (in VS-50XL20U and VS-67XL20U)	2	5. Spacer (1mm thickness for VS-50XL20U and VS-50XLW20U, 2mm thickness for VS-67XL20U)
6. Control cable	1	6. Wrench (for level adjuster)
7. User's manual	1	
Optional products		**Others**
1. Wireless/wired remote control: R-FD10TX		1. Base stand
2. Input board: VC-B20KA		2. Level adjuster
3. Input board: VC-B20KV		3. Level adjuster fixing metal part
4. Power cord (3m) for North America: JC-PC3MA for Europe: JC-PC3ME for China: JC-PC3MC		4. Wall fixing metal part 5. Anchor bolt 6. Hexagon socket head cap screw (M6)

1.2.3. Input board installation (When using optional input board)

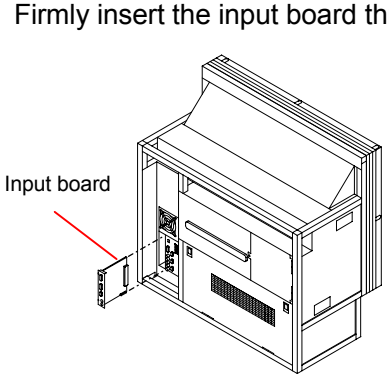
When using the optional input board, VC-B20KA, VC-B20KV, install it into the projector according to the following steps.

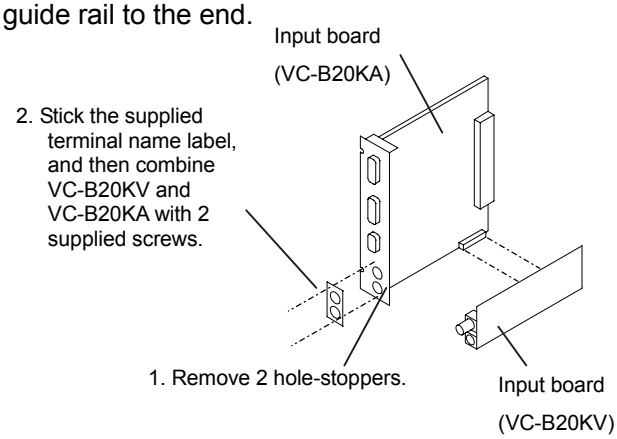
Be sure to turn off the main power switch when you attach it.

1. Remove the panel cover in the control panel by removing the 6 screws at the positions shown in the figure.

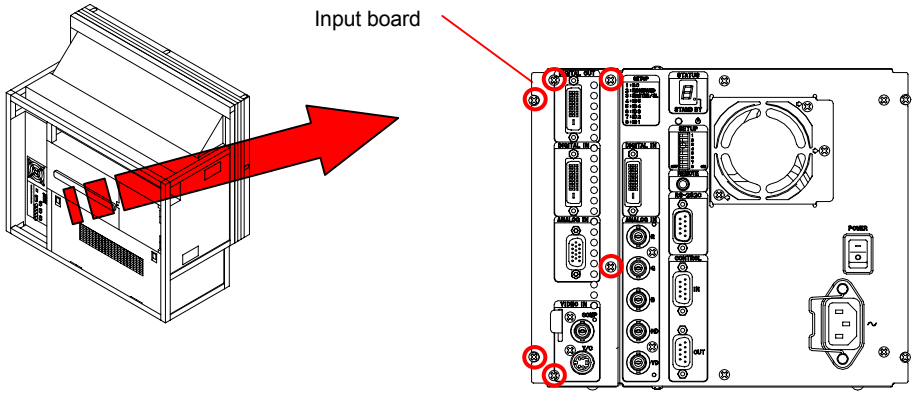


2. When you use VC-B20KV, stick the supplied terminal name label on VC-B20KA, and then combine VC-B20KV and VC-B20KA with 2 supplied screws.
   Firmly insert the input board through the guide rail to the end.




Input board
(VC-B20KA)
2. Stick the supplied terminal name label, and then combine VC-B20KV and VC-B20KA with 2 supplied screws.
1. Remove 2 hole-stoppers.
Input board
(VC-B20KV)

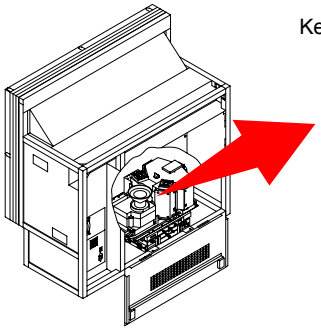
3. Firmly attach the input board with the 6 screws that has been removed in the step 1 at the positions shown in the figure.

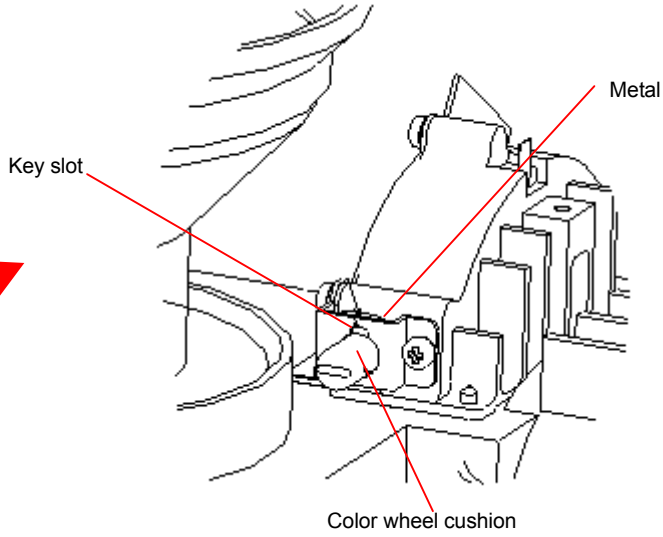


1.2.4. Color wheel unlocking

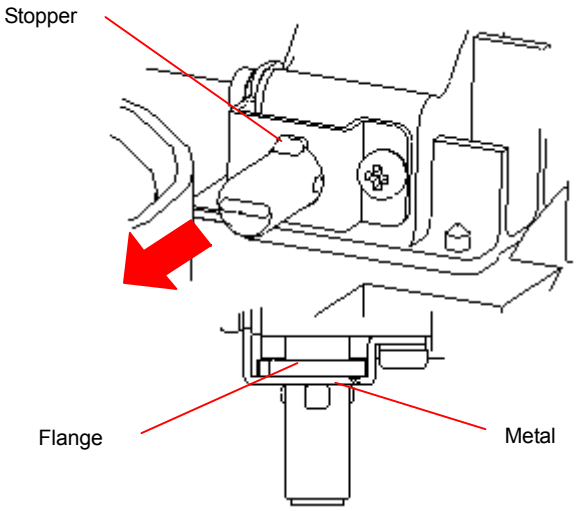
Unlock the color wheel surely before turning on the main power switch. Also for VS-50XLW20U, detach the lamp cushion. Turning on without the unlocking or the detaching may cause damage.

1. Make sure the key slot faces the top as you begin the procedure.

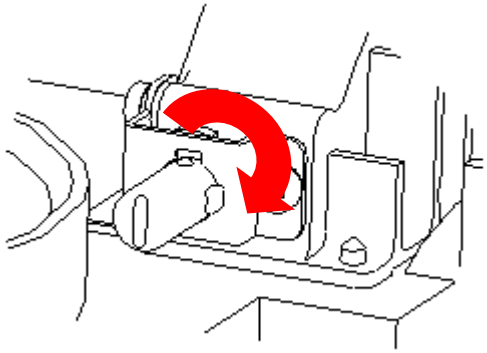




2. Pull the color wheel cushion till the flange hits the metal part.
   - For VS-50XLW20U, pliers are recommended to use since it is hard to access with fingers.



3. Turn it 90 degrees clockwise.

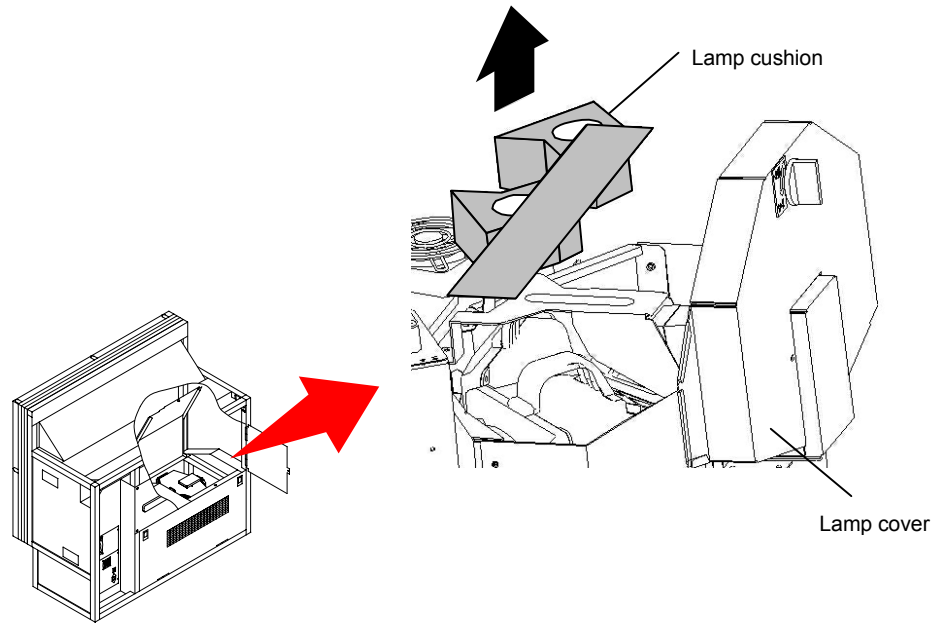


Caution
Before shipment, be sure to lock the color wheel (see chapter 1.13.2, on page 64). Shipping the product without locking may cause breakage.

1.2.5. Lamp cushion detaching (for VS-50XLW20U)

For VS-50XLW20U, detach the lamp cushion before turning on the main power switch. Turning on without detaching may cause smoking and catching fire.

- It should be remembered to lock the lamp cover after detaching. If you neglect to lock it, the lamp changer may not work correctly.

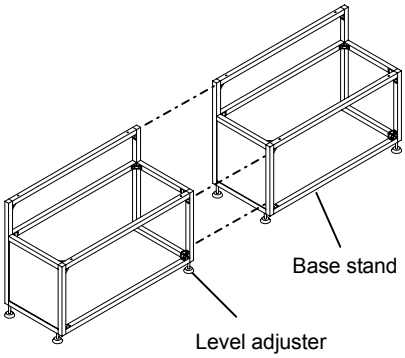


Caution
Before shipment, be sure to insert the cushion (see chapter 1.13.3, on page 65). Shipping the product without inserting may cause breakage.

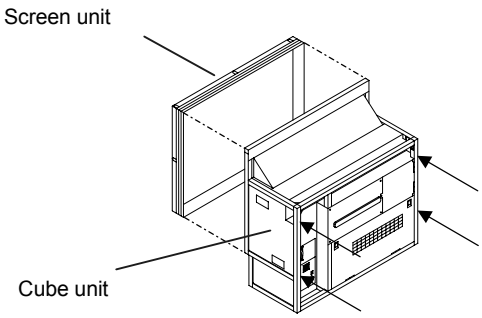
1.2.6. Installation procedure

1.2.6.1. Assembling the base stand and projector

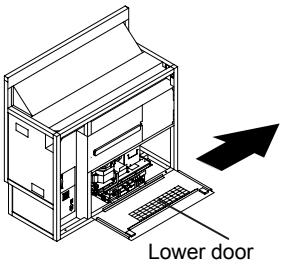
1. Assemble base stands.
2. Adjust the level adjuster to make the base stand both level and plumb by means of spirit level.



3. Loosen the 4 screws per units shown by the arrow lines in the right figure with the Allen wrench (5 mm) to remove the screen units from all projectors to be installed (this applies to model VS-50XL20U and VS-50XLW20U which are supplied with the screen fitted).

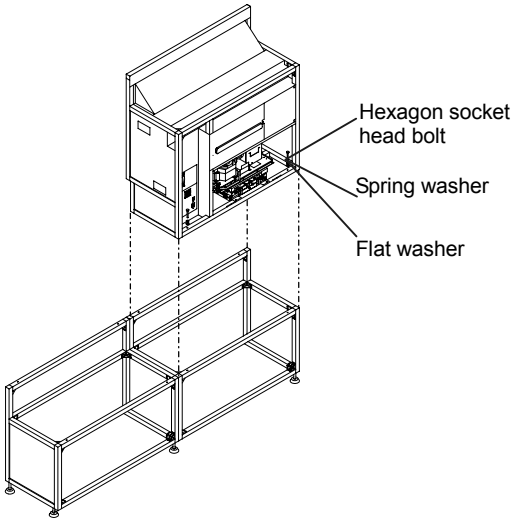


4. Open the lower door 90 degrees by pushing down the handles. And then slide to the right to detach. The door cannot be opened further than 90 degrees.

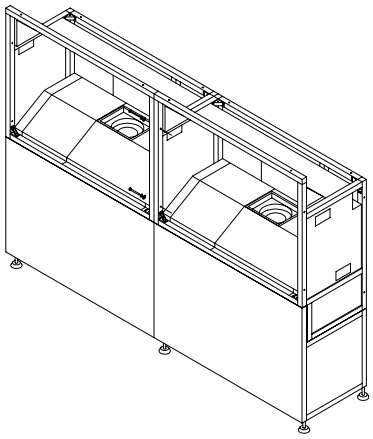


5. Place the lower projector on the base stand.
6. Fix the projector at 4 points with supplied hexagon socket head bolts, spring washers and flat washers.

Caution
When holding up the projector, be careful not to put your hand between the projector and the base stand.

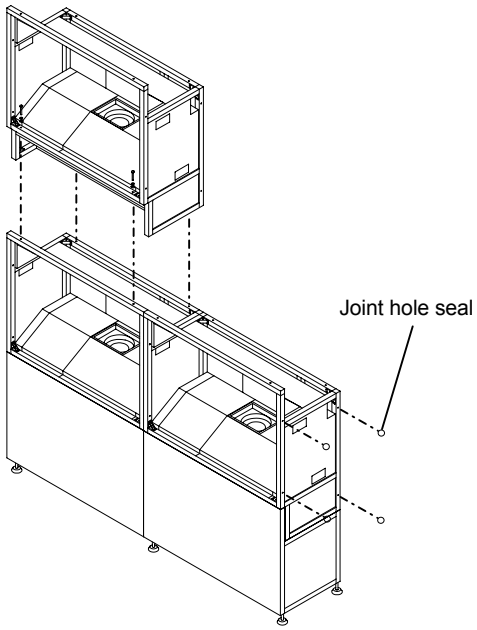


7. Place the next bottom row projector on the base stand and fix it in the same way.
8. Join the right and left projectors at 4 points with supplied hexagon socket head bolts, spring washers and flat washers.



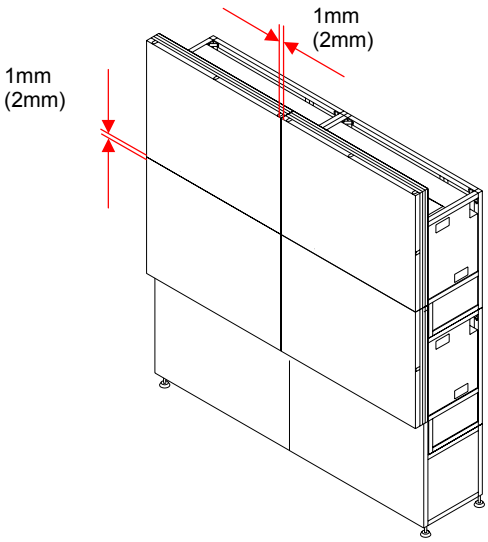
9. Place the upper projectors on the assembled unit.
10. Fix them vertically and horizontally at 4 points each with supplied hexagon socket head bolts, spring washers and flat washers.
11. Stop up the holes in both sides that are not used for multi-screen with joint hole seals.

Caution
To avoid the units from falling, measure the horizontal and vertical degrees with the level etc. and make sure the units are stably assembled.



1.2.6.2. Space adjustment between the screens

1. Temporarily attach the screen units, which were detached in the previous step (for VS-67XL20U, the screens were supplied separately).
2. Put the spacers between each screens and adjust the screen gaps to be 1 mm for VS-50XL20U/VS-50XLW20U or 2 mm for VS-67XL20U.
3. Firmly tighten the 4 screen fixing screws.

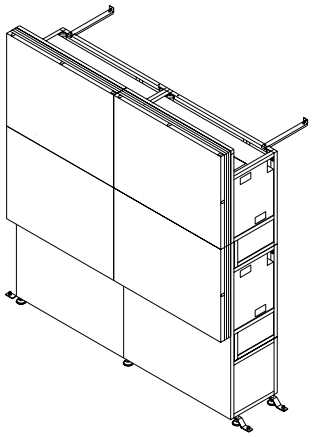


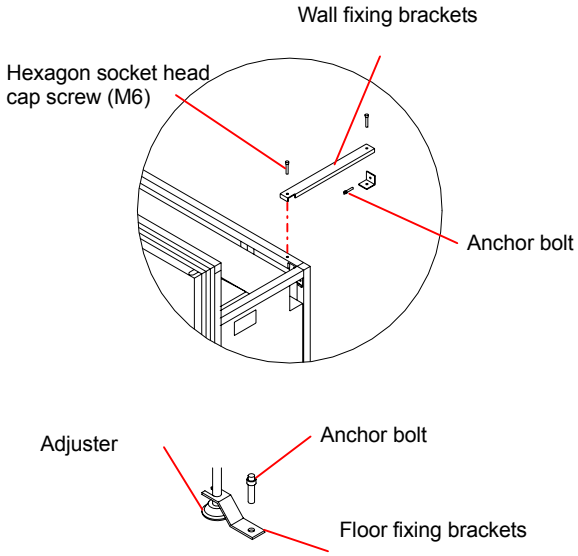
1.2.6.3. Fixing to the wall and floor

You don't have to attach the lower door in this chapter since the picture outline has yet to be adjusted as explained in the next chapter.

After the picture outline adjustment, attach the door in the reverse order of 1.2.6.1.

1. Attach floor fixing brackets to 4 corners of the level adjuster and fix them to the floor with the anchor bolts.
2. Fix the back of the upper part of the projector to the wall with wall fixing brackets such as shown in the following figure.





Caution
Make sure the whole set is assembled firmly and installed stably. To prevent the set from falling due to unpredictable events such as earthquakes and shocks, fix the set firmly to the wall and floor. Furthermore, carefully confirm the strength of the fixing area of the installation place (wall and floor). The wall and floor fixing method differs according to the number of the assembled units.

1.3. Connecting

1.3.1. Connecting with video device

Connect with image input sources adequately.

1.3.2. Control signal connection

An external controller such as a personal computer etc. can control the projector through RS232C format communication. In the case of multi-screen, connect the external controller with one projector via RS232C and connect CONTROL IN and CONTROL OUT terminals between projectors with supplied control cables. Do not connect to a loop.

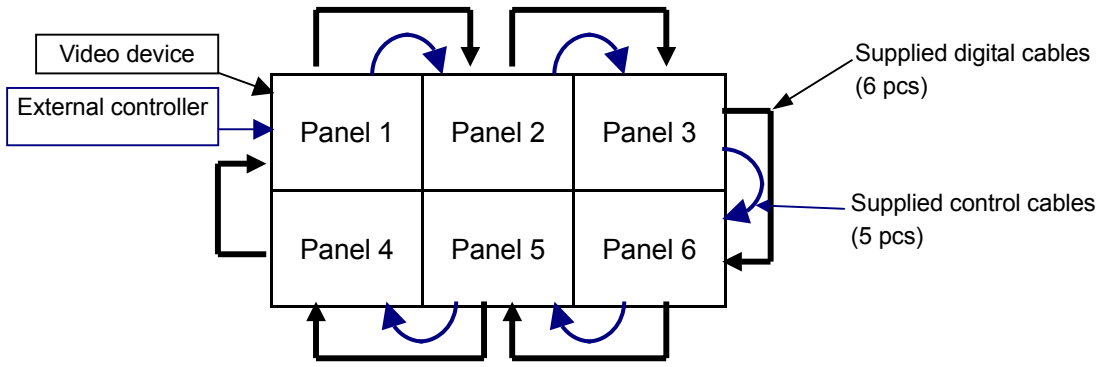
Each projector can be controlled separately from one controller by allocating ID numbers. Up to 32 projectors can be chained in one control line. Make sure that the dipswitch (chapter 1.5.2, on page 21) is set adequately according to the connection.

1.3.3. Digital image signal connection

1.3.3.1. In the case of daisy chain

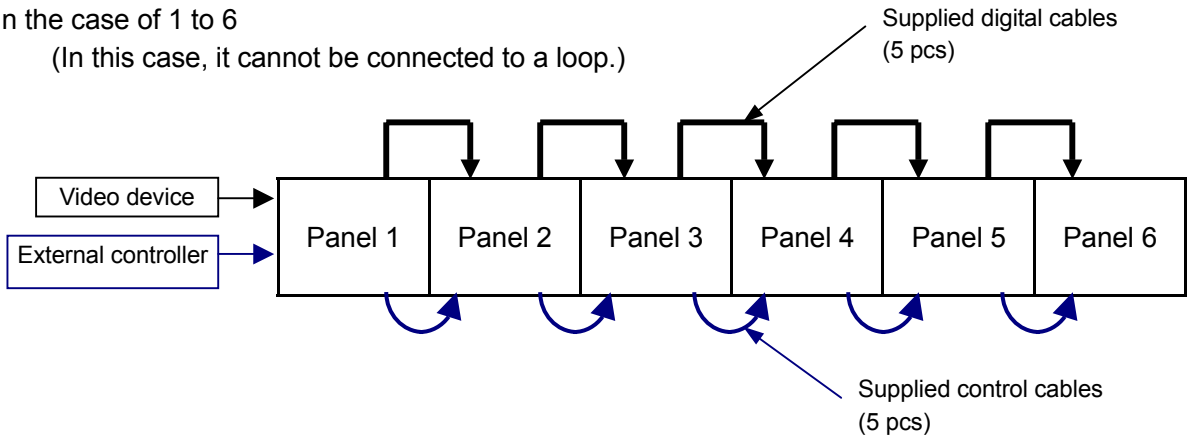
In the case of digital connection by daisy chain, connect DIGITAL IN and DIGITAL OUT terminals between projectors with digital cables (DVI). The digital image signal can accept to daisy chain up to 16.

In the case of 2 to 3



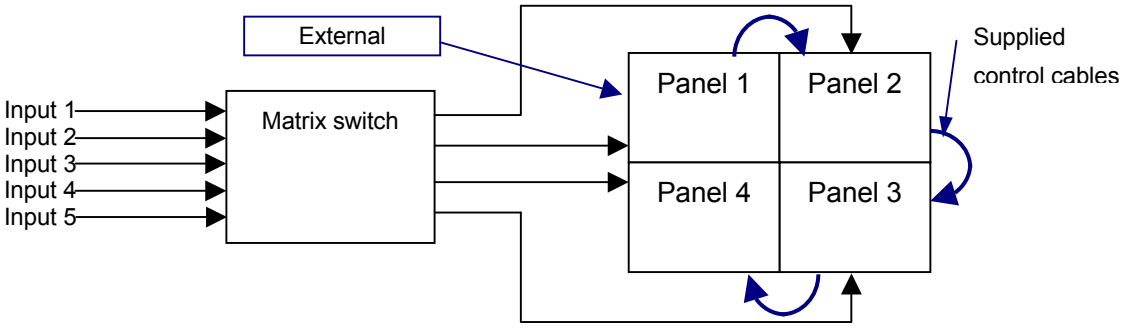
In the case of 1 to 6

(In this case, it cannot be connected to a loop.)



1.3.3.2. In the case of other than daisy chain

The multi-screen can be configured by connecting with matrix switch as well as daisy chain connection.



Connecting with matrix switch

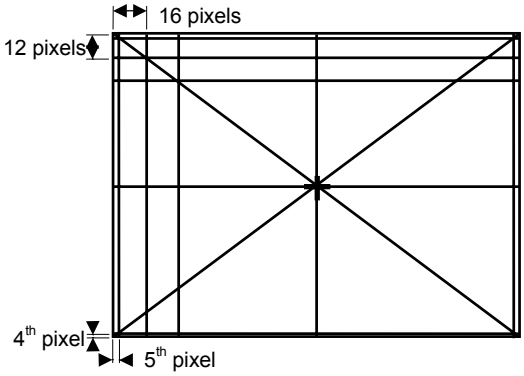
1.4. Picture outline adjustment

Caution

Before turning on, make sure again that the color wheel has been unlocked (chapter 1.2.4, on page 7) and, for VS-50XLW20U, the lamp cushion has been detached (chapter 1.2.5, on page 8).

1.4.1. Displaying internal test pattern

Press [TEST] button twice to display the internal crosshatch pattern for picture outline adjustment. This pattern is a crosshatch with lines spaced at 16 pixels (horizontal) and 12 pixels (vertical). There are also the adjustment lines for over scan located 5th pixel inside from each side and 4th pixel inside from top/bottom end.



1.4.2. Overscan mode

1.4.2.1. In the case of over scan

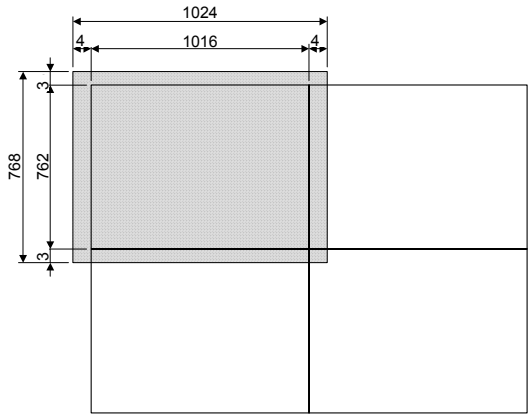
Adjust the picture outline so that 4 horizontal pixels at each end and 3 vertical pixels at each end are projected outside the screen edge.

With overlap setting (chapter 1.5.3.6, on page 22), a black pixel-lacking area in fringe of the screen becomes hard to see, even if the projection image unexpectedly shifts in daisy-chained multi-screen.

The numbers of pixels per screen are;

Horizontal: 1,024-4-4=1,016 pixels

Vertical: 768-3-3=762 pixels



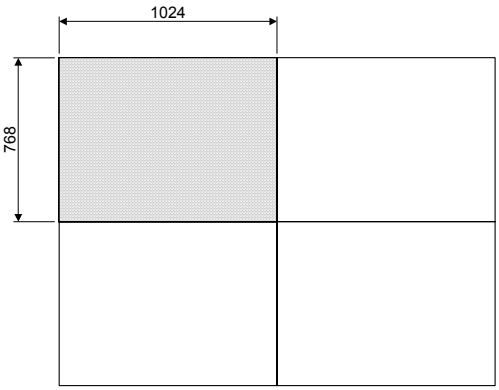
1.4.2.2. In the case of non-over scan

Adjust picture outline without projecting pixels outside the screen.

The numbers of pixels per screen are;

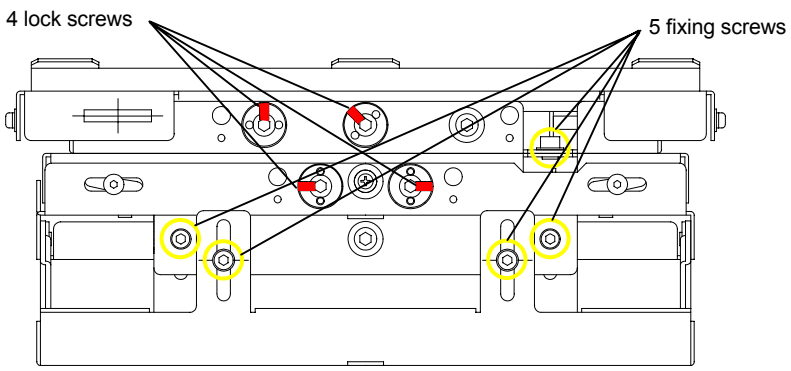
Horizontal: 1,024 pixels

Vertical: 768 pixels

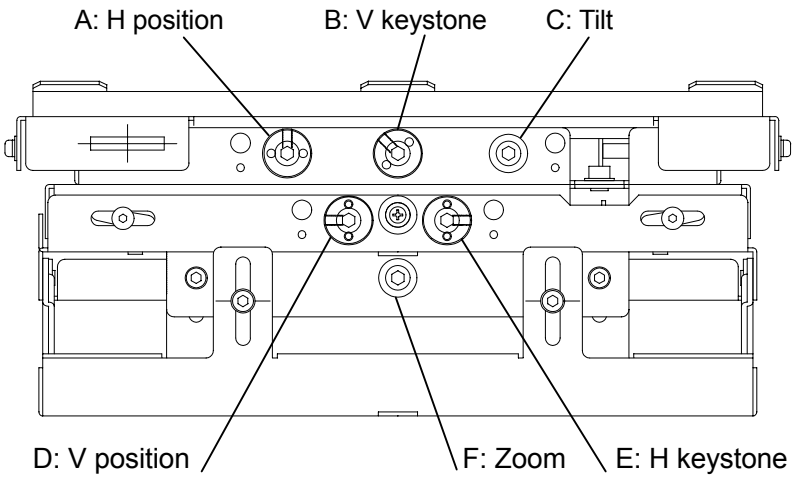


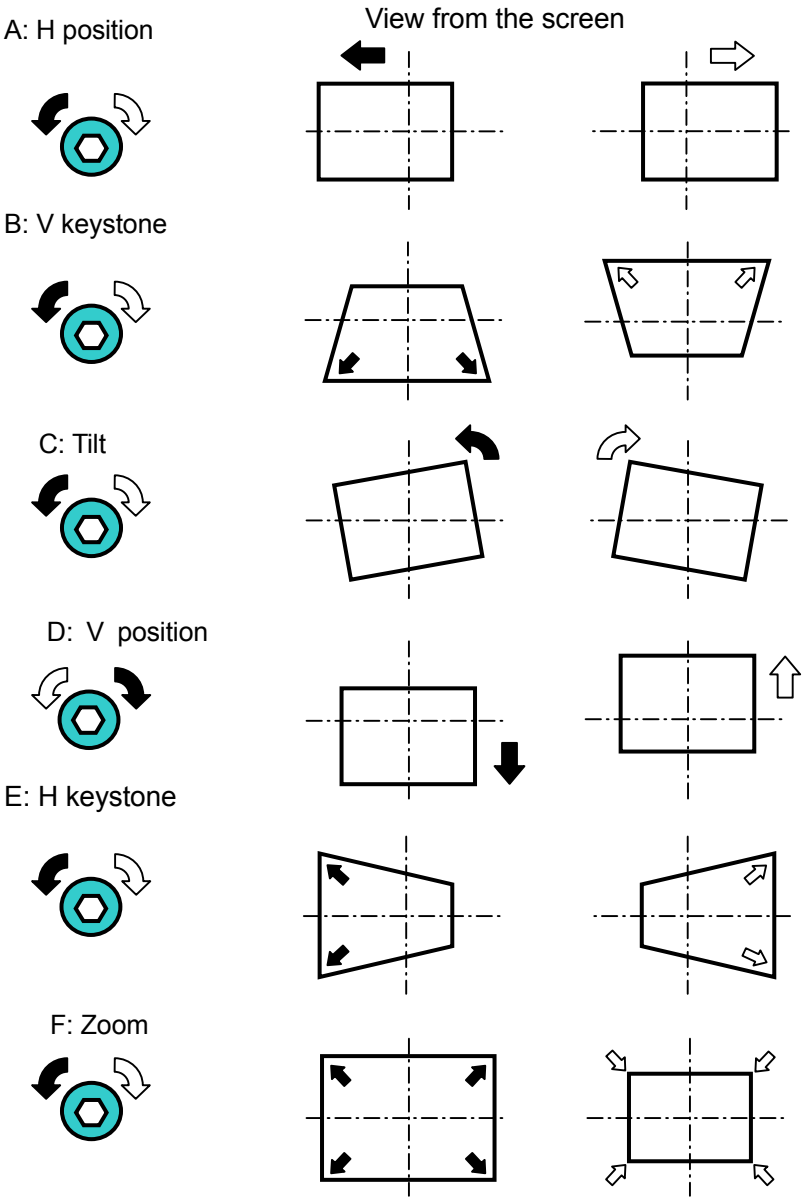
1.4.3. Release the lock screws

Before 6-axis adjustment, release the locks on the adjuster. Loosen the 4 locking screws by Allen wrench (2mm) and 5 fixing screws in the adjuster by Allen wrench (4mm).



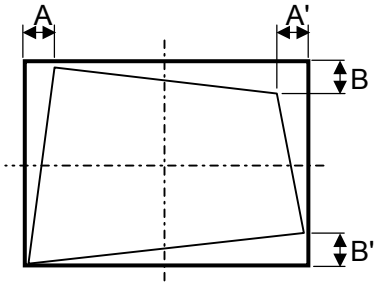
1.4.4. 6-axis adjustment





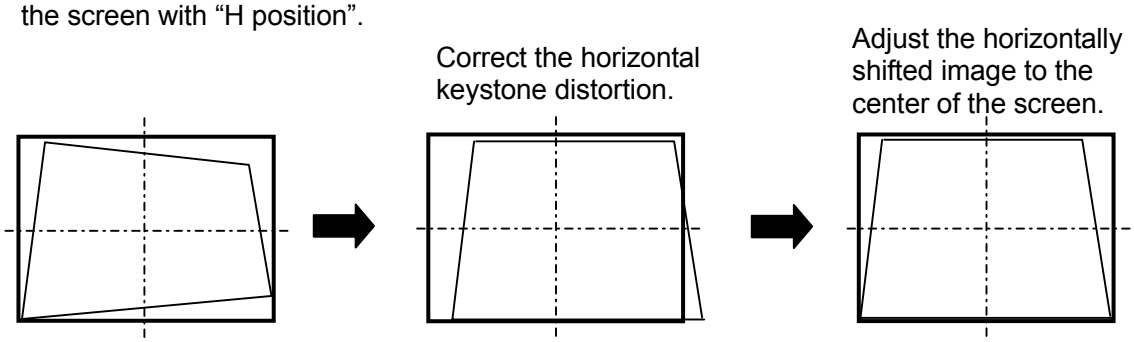
1.4.5. Adjusting procedure

Perform the picture outline adjustment by Allen wrench (5mm) by referring to the previous chapter of “6-axis adjustment”.

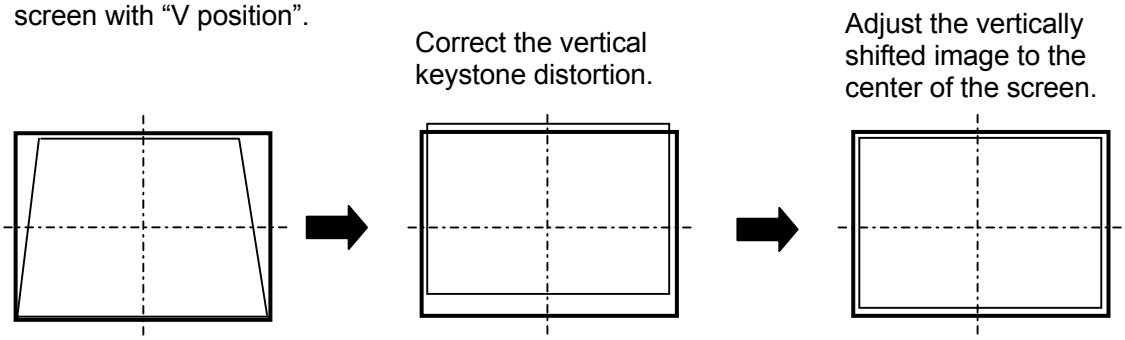


1. After making the image size smaller than the outline of the screen using the zoom axis, adjust Tilt, V position and H position so that upper and lower spaces and right and left spaces will be almost equalized respectively.
   A=A', B=B'

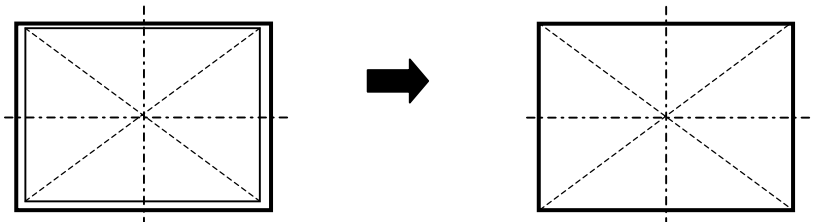
2. After correcting the horizontal keystone distortion, adjust the image position to the center of the screen with “H position”.



3. After correcting the vertical keystone distortion, adjust the image position to the center of the screen with “V position”.



4. Adjust the image size to fit the outline of the screen.



5. After adjusting roughly on each single screen, adjust finely on the multi screen so that each screen edge will link seamlessly.

1.4.6. Fixing the adjuster

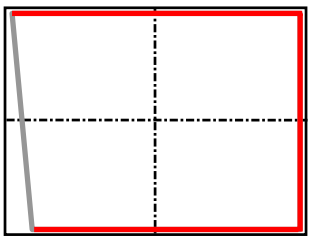
Fix the 5 fixing screws in the reverse order of “1.4.3 Release the lock screws” on page 14.
Before shipment, in addition to above, be sure to fix the 4 lock screws of the adjuster and perform the color wheel locking. Also for VS-50XLW20U, be sure to insert the lamp cushion (see chapter 1.13, on page 64).

1.4.7. Mirror distortion adjustment (for VS-50XL20U and VS-50XLW20U)

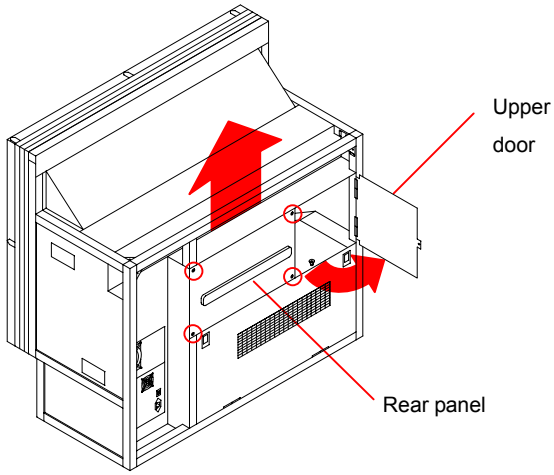
1.4.7.1. Parallelogram distortion correction

If a parallelogram distortion that cannot be corrected by 6-axis adjuster appears, correct it according to the following procedure.

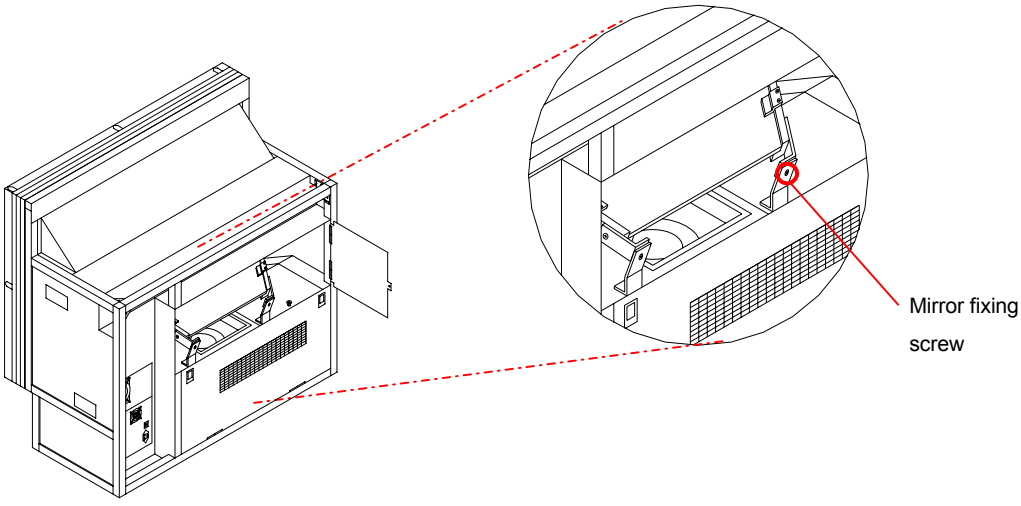
1. Allign top, bottom and right lines of the crosshatch pattern with the screen edge by 6-axis adjuster.



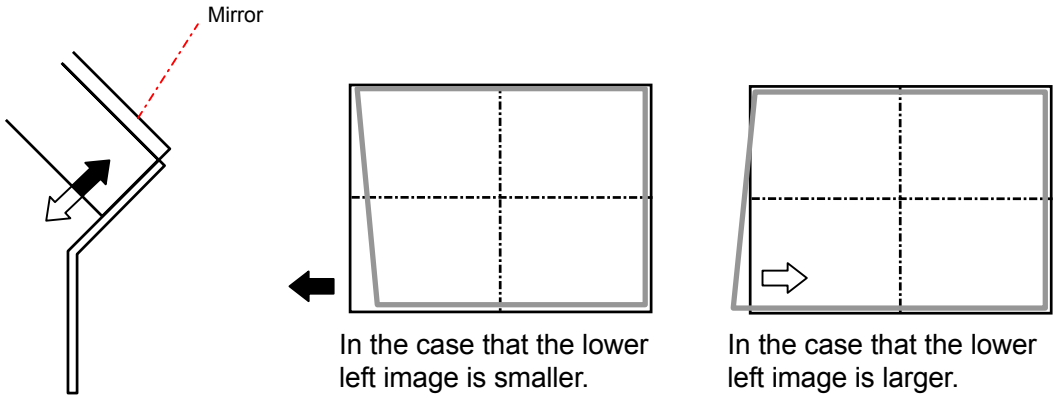
2. Loosen 4 screws in the rear panel.
   Detach the panel with opening the upper door and lifting the panel.



3. Loosen the mirror fixing screw located in the right seeing from the rear side.



4. Correct the distortion by moving the lower part of the mirror up or down.
   In the case that the lower left image is smaller: Move it upward
   In the case that the lower left image is larger: Move it downward

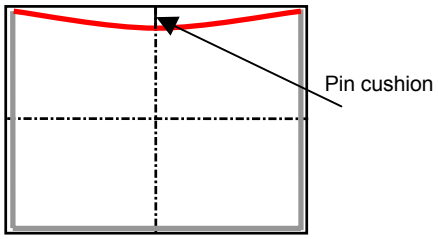


5. Tighten the mirror fixing screw.
6. After the correcting, adjust finely by 6-axis adjuster.

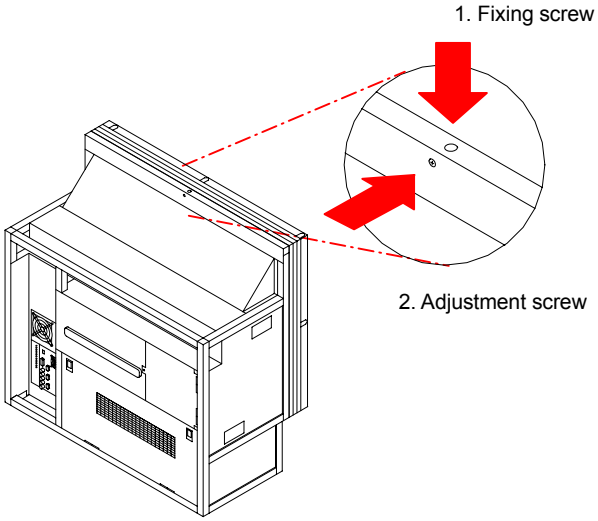
1.4.7.2. Pincushion distortion correction

If pincushion distortion, which cannot be corrected by 6-axis adjuster, appears, correct it according to the following procedure. This correction should be done before cube stacking.

1. Allign upper left and upper right corners of the crosshatch pattern with the screen corners by 6-axis adjuster.



2. Loosen the fixing screw and then turn the adjustment screw clockwise until the distortion is corrected.



3. After the adjustment, tighten the fixing screw.
4. After the adjustment, fix the 6-axis adjuster (chapter 1.4.6, on page 16).

1.5. Initial set up

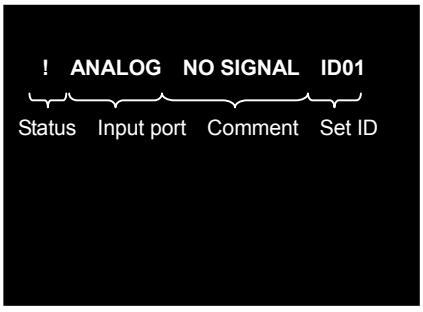
1.5.1. Menu operation

1.5.1.1. Control button list

Remote control	In stand-by state	In normal mode		In advanced mode			
		Menu OFF		Menu OFF		Menu ON	
		Test pattern ON	Test pattern OFF	Test pattern ON	Test pattern OFF	Test pattern ON	Test pattern OFF
POWER ON	Turn on	—					
POWER OFF	—	Turn off					
DISPLAY	—	Status information		Status information (Press-and-hold for detail information)			
PIC MUTE	—	—		—	Picture mute	—	Picture mute
INPUT A	—	—		Selective input signal list			
MENU1	—	—		Menu 1		—	
MENU2	—	—		Menu 2 (Press-and-hold for system memory menu)		—	
MEM LIST	—	—		Input memory and display memory list			
R	—	—		R raster on/off	R input on/off	R raster on/off	R input on/off
G	—	—		G raster on/off	G input on/off	G raster on/off	G input on/off
B	—	—		B raster on/off	B input on/off	B raster on/off	B input on/off
TEST	—	—		Test pattern on – pattern rounding – test pattern off			
FUNC	—	—		Remote ID setting mode on/off			
NORMAL	—	Normal mode/advanced mode switching				Initialize	
ESC	—	Cancel, back or test pattern off, etc.					
ENTER	—	—		Define			
UP	—	—		—	—	Menu option and cursor up	
DOWN	—	—		—	—	Menu option and cursor down	
LEFT	—	—		—	—	Value down	
RIGHT	—	—		—	—	Value up	
Number	—	Display memory calling				—	

1.5.1.2. Operation mode

- This product has two operation modes, “normal mode” and “advanced mode”. Use the normal mode in the usual operation. Switch to the advanced mode when you set up or adjust the projector.
- The two modes can be switched by [NORMAL] button when there is no menu on screen.
- The normal mode allows you to turn off the power by [POWER] button, to display the status information by [DISPLAY] button, to change the operation mode by [NORMAL] button and to call the display memory by number buttons.
- Adjustment menu cannot be called in the normal mode.
- In advanced mode, the status information described in right figure appears on screen.
  1. Status display:
     - “!” mark appears when values in menu are adjusted. It is also displayed when a value is automatically changed by internal process.
     - In VS-50XLW20U, “☀” mark appears when the status of spare lamp is other than “NEW”.

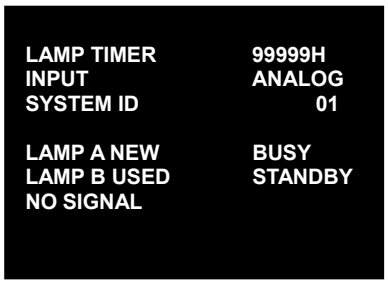


- During lamp position auto calibration (for VS-50XLW20U) and initial sensor value obtaining, the operating status is noticed by figures such as “3”, “4” or “7”. When the function has worked correctly, it disappears after 5-minute displaying.

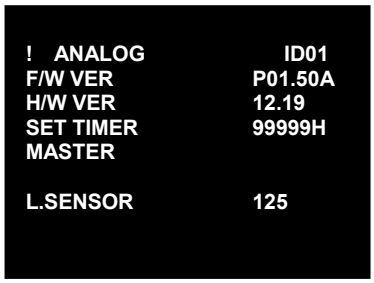
2. Input port: Displaying current input port.
3. Comment:
   - “NO SIGNAL” is displayed when any image signal is not input.
   - “TEST *” is displayed during internal test pattern displaying.
   - “MUTE” is displayed during picture mute.
4. Set ID: Displaying set ID.

1.5.1.3. Basic menu operation

- Adjustments should be conducted by means of the remote control in advanced mode.
- [MENU1] button displays menu 1.
- [MENU2] button displays menu 2 while the input board is attached. Press and hold the [MENU2] button to display the system memory menu.
- If you select an item in the menu 1 or 2 and press [ENTER] button, you can adjust each item. Some items indicate the lower menu layer.
- Up/down button selects menu item. Left/right button changes selected value.
- If you press [NORMAL] button in the adjusting item, the message “RESET OK?” appears and it resets adjustment values after pressing [ENTER] button. By [ESC] button, you can exit the menu without resetting.
- [FUNC] button allows remote ID setting. See chapter 1.5.1.4 for details.
- [TEST] button can select the test patterns. See chapter 2.3, on page 69 for details. **Even if any menus are being displayed on screen, the remote ID setting is available.**
- [R][G][B] buttons can turn on/off the color mute. It is not available in a few test patterns.
- If 3-digit number is input by number buttons [1] to [0] while there is no menu on screen, the display memory can be called directly. For instance, press 001 to call display memory 1.
- [DISPLAY] button shows status information.



Status information ([DISPLAY] button)



Detail status information
([DISPLAY] button press-and-hold)

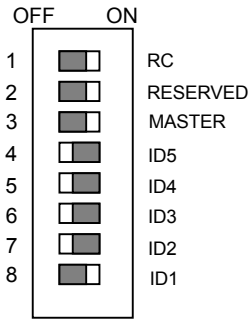
1.5.1.4. Remote ID

Remote ID is used to operate the remote control toward specific screens in a multi-screen system. **Even if any menus are being displayed on screen, remote ID is selectable.**

Remote ID can be designated the set ID, which is set in dipswitch, by 2-digit number in advanced mode. For instance, if the set ID is one, input 01. It can be also selected by left/right button after the [FUNC] button. The projector other than designated ID will ignore the remote control. Pressing 00 after [FUNC] button enables remote control of all projectors regardless of the remote ID setting.

1.5.2. Dipswitch setting

Before turning on the main power switch, set the dipswitch correctly according to the system configuration. Be sure to turn off the main power switch if you change the setting in the middle of the operation. Only turning on the main power switch will renew the setting.



No.	Name	Function	Initial setup
1	RC	Enabling remote control (ON: enabled, OFF: disabled)	ON
2	RESERVED	Normally ON. When writing the firmware, set OFF.	ON
3	MASTER	MASTER/SLAVE setting (ON: MASTER, OFF: SLAVE)	ON
4	ID5	Designating set ID number (1 to 32) (ON: 1, OFF: 0) ID No.=1×(ID1)+2×(ID2)+4×(ID3)+8×(ID4)+16×(ID5) Example: ID No.=1: ID1=ON, ID2, ID3, ID4 and ID5=OFF ID No.=32 :ID1, 2, 3, 4 and 5=OFF	OFF
5	ID4		OFF
6	ID3		OFF
7	ID2		OFF
8	ID1		ON

1.5.3. System set up

Set the “system memory” to suit the system as shown below. The parameters are effective for all the input memories and display memories.

Press and hold [MENU2] button to display the system memory menu. You can exit the menu by [ESC] button.

1.5.3.1. LAMP POWER

Used to set brightness mode.

You can select NORMAL or BRIGHT. Normally set NORMAL. BRIGHT mode can make high bright display. In this case, the lamp life becomes shorter than NORMAL mode.

[Procedure]

1. Select LAMP POWER in MISC FUNCTION in the system menu.
2. Set NORMAL or BRIGHT.

1.5.3.2. LAMP MODE

Used to set lamp-driving system.

You can select LONG LIFE, NORMAL or F-REDUCTION. Normally set F-REDUCTION.

- F-REDUCTION: It drives with lamp flicker reduction.
- LONG LIFE: It drives with longer lamp life than F-REDUCTION mode even though the flickers may occur.
- NORMAL: it automatically change F-REDUCTION and LONG LIFE mode.

[Procedure]

1. Select LAMP MODE in MISC FUNCTION in the system menu.
2. Set F-REDUCTION, LONG LIFE or NORMAL.

1.5.3.3. TERMINATE

Used to select the termination of analog input synchronizing signal in the main unit.

You can select 75 or 1K. Normally set 1K (1KΩ termination). If the synchronization is lost while 5-line (separate sync) signal inputs to the analog input terminal in the main unit, set this item to 75 (75Ω termination). The image may be displayed correctly.

[Procedure]

1. Select TERMINATE in MISC FUNCTION in the system menu.
2. Set 75 or 1K.

1.5.3.4. S.TERMINATE (When the input board is selected)

Used to select the termination of analog input synchronizing signal in the input board.
You can select 75 and 1K. Normally set 1K (1KΩ termination). If the synchronization is lost while 5-line (separate sync) signal inputs to the analog input terminal in the input board, set this item to 75 (75Ω termination). The image may be displayed correctly.
[Procedure]

1. Select S.TERMINATE in MISC FUNCTION in the system menu.
2. Set 75 or 1K.

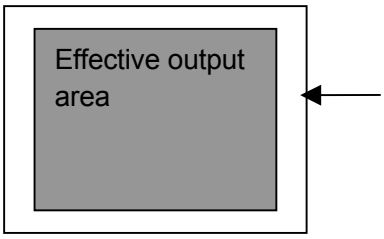
1.5.3.5. START MEMORY

Used to designate the display memory number that is loaded at start-up. Normally set OFF. To display a designated image source, set the registered display memory number (chapter 1.8.7, on page 49), (or the registered input memory number when the main unit input port is selected). If it is set OFF, the projector starts up with last loaded display memory.
[Procedure]

1. Select START MEMORY in MISC FUNCTION in the system menu.
2. Set 1 – 256 or OFF.

1.5.3.6. OVERLAP (When the input board is selected)

Used to set the overlap mode. In overlap mode, the projector can automatically calculate the output size in consideration of overlapping area.
In the case of overlapping (chapter 1.4.2.1, on page 14), setting OVERLAP ON automatically calculates the output size so as to fit the screen size and creates the overlap area that has a width of 4 pixels each in the horizontal direction and a width of 3 pixels each in the vertical direction.
In overlap mode, if the projection image unexpectedly shifts in daisy-chained multi-screen, a black pixel-lacking area in fringe of the screen becomes hard to see.



The screen has the overlap area with a horizontal width of 4 pixels and a vertical width of 3 lines in overlap mode.

In the case of a single screen or a multi-screen without the input board, normally set OFF since blurred small characters may annoy you.
Also set OFF when the picture outline is adjusted without overlapping.
[Procedure]

1. Select OVERLAP in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.3.7. OFFSET (When the input board is selected)

This adjustment is normally unnecessary.

Used to finely adjust the horizontal/vertical position and size if the picture outline is shifted after the final 6-axis adjustment.

[Procedure]

1. Select OFFSET in MISC FUNCTION in the system menu.
2. H.POSITION: to adjust horizontal position.
3. V.POSITION: to adjust vertical position.
4. H.SIZE: to adjust horizontal size.
5. V.SIZE: to adjust vertical size.

1.5.3.8. BAUD RATE

Used to select the transmission speed of RS-232C in accordance with the external controller. You can select 9,600bps or 19,200bps.

[Procedure]

1. Select BAUD RATE in MISC FUNCTION in the system menu.
2. Set 9600 or 19200.

1.5.3.9. SYSTEM SYNC

Used to set 60Hz or 50Hz in accordance with the vertical synchronizing signal of mainly displayed moving pictures. Set 60Hz for NTSC signal or 50Hz for PAL signal. Make sure that all projectors are set the same system sync setting in a multi-screen.

[Procedure]

1. Select SYSTEM SYNC in MISC FUNCTION in the system menu.
2. Set 60 or 50.

1.5.3.10. IMAGE FLIP

Used to invert the displayed image vertically or horizontally. Normally set S/W in cube projector.

- S/W: Normal image
- W/N: Vertically flip image
- S/E: Horizontally flip image
- N/E: Vertically/horizontally flip image

[Procedure]

1. Select IMAGE FLIP in MISC FUNCTION in the system menu.
2. Set S/W, W/N, S/E or N/E.

1.5.3.11. INDICATION

This adjustment is normally unnecessary.

Used to set how to indicate the status information.

WARNING (for VS-50XLW20U)

This is to set the indication of warning mark to induce to replace the spare lamp after auto-lamp changing and the pre-announcement of auto-lamp changing on screen. See chapter 1.10.6 “Warning indication (for VS-50XLW20U)”, on page 61 for details.

- OFF: No indication.
- MESSAGE, ☀: Displaying the pre-announcement of auto-lamp changing and the warning mark to induce to replace the spare lamp.
- ☀: Displaying the warning mark to induce to replace the spare lamp.

[Procedure]

1. Select WARNING in INDICATION in MISC FUNCTION in the system menu.
2. Set OFF, MESSAGE ☀ or ☀.

STANDBY

This is to set the blue LED indicated on screen (“2.4 LED display”, on page 70) at stand-by state.

- LED: Lighting the blue LED on screen.
- OFF: No indication.

[Procedure]

1. Select STANDBY in INDICATION in MISC FUNCTION in the system menu.
2. Set LED or OFF.

ERROR

This is to set the blue LED indicated on screen (“2.4 LED display”, on page 70) at protect shutdown.

- LED: Blinking the blue LED on screen.
- OFF: No indication.

[Procedure]

1. Select ERROR in INDICATION in MISC FUNCTION in the system menu.
2. Set LED or OFF.

BLOWOUT

This is to set the blue LED indicated on screen (“2.4 LED display”, on page 70) at lamp blowout when BLOWOUT (chapter 1.5.3.13, on page 25) is set OPERATE.

- LED: Blinking the blue LED on screen.
- OFF: No indication.

[Procedure]

1. Select BLOWOUT in INDICATION in MISC FUNCTION in the system menu.
2. Set LED or OFF.

1.5.3.12. AUTO POWER ON

Used to set automatic turning on when the main power is supplied. The initial setting is OFF.

- ON: Automatic turning on when the main power is supplied.
- OFF: When the main power is supplied, the projector uses the last memory status. For instance, it becomes stand-by state if the main power was turned off in stand-by state. Likewise, if it was turned off in the state of power on, it automatically turns on.

[Procedure]

1. Select AUTO POWER ON in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.3.13. BLOWOUT

Used to select the status after lamp blowout. The initial setting is OPERATE.

- OPERATE: After lamp blowout, the functions that are required to operate multi-screen system such as digital out, remote control and command control, etc. are maintained. Set OPERATE when digital out is used in daisy-chained multi-screen.
- SHUTDOWN: After lamp blowout, the projector starts protect shutdown. Set SHUTDOWN in the case of a single screen or a multi-screen without the input board.

[Procedure]

1. Select BLOWOUT in MISC FUNCTION in the system menu.
2. Set OPERATE or SHUTDOWN.

1.5.3.14. LAMP CHANGER (for VS-50XLW20U)

CALIBRATION

This adjustment is normally unnecessary since it is automatically set in auto-lamp changing (chapter 1.10.3, on page 59).

It adjusts the lamp position optimally to maximize the brightness.

[Procedure]

1. Select CALIBRATION in LAMP CHANGER in MAINTENANCE in the system menu.
2. Press [ENTER] button in reply to “SET OK?” message to adjust the lamp to the suitable position automatically.

CHANGE MODE

Used to set the condition to start auto-lamp changing according to the brightness deterioration detected by the luminous sensor (chapter 1.10.3.2, on page 59). The initial setting is NORMAL.

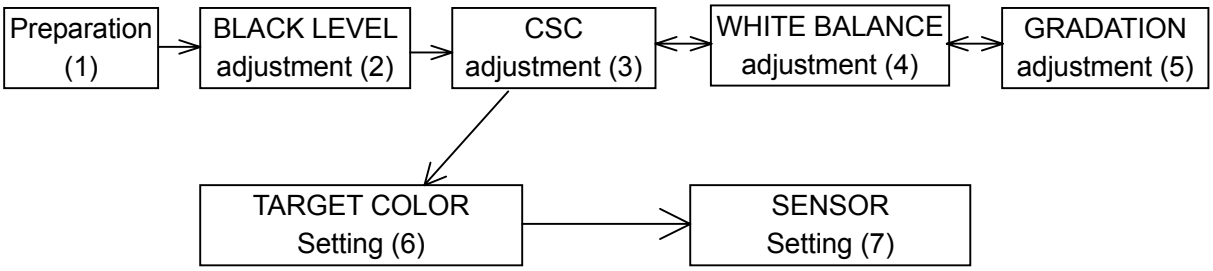
- OFF: It does not perform auto-lamp changing due to the brightness deterioration.
- NORMAL: Auto-lamp changing starts when the brightness becomes 50% of the initial value.
- LONG: Auto-lamp changing starts when the brightness becomes 30% of the initial value.

[Procedure]

1. Select CHANGE MODE in LAMP CHANGER in MAINTENANCE in the system menu.
2. Set OFF, NORMAL or LONG.

1.5.4. Color balance adjustment

Adjusting the luminance and tint between each screen of a multi-screen. In principle, the adjustment should be according to (3) CSC Adjustment. However, follow (2) BLACK LEVEL adjustment, (4) WHITE BALANCE adjustment and (5) GRADATION adjustment, if necessary. After that, set TARGET COLOR and SENSOR to get optimum luminance and tint.



Color balance adjustment flow chart

1.5.4.1. Preparation

Before the adjustment, set each value according to the following table.

	Item	Value	Menu
1	CONTRAST	100	Menu 1
2	BRIGHTNESS	0	Menu 1
3	COLOR MATRIX	OFF	Menu 1
4	WHITE BALANCE	R-GAIN 1000 G-GAIN 1000 B-GAIN 1000	INSTALLATION in system menu
5	WHITE BOOST	OFF	MISC FUNCTION in system menu
6	SENSOR	STOP or OFF	MAINTENANCE in system menu

1.5.4.2. BLACK LEVEL

This adjustment is not necessary unless the difference of the luminance and tint in black is noticeable between each screen. Be careful not to deteriorate the contrast because it can be adjusted only by increasing the black luminance level.

[Procedure]

1. Press [TEST] button three times and press [R], [G] and [B] button to display the black signal in the adjustment white.
2. Select BLACK LEVEL in INSTALLATION in the system menu.
3. Select R-, G- or B-LEVEL and adjust each color level in black.

1.5.4.3. CSC

Used to select in CSC1 or CSC2, the memories to save CSC adjustment values.

[Procedure]

1. Press [TEST] button three times to display the adjustment white.
2. Select CSC in MAINTENANCE in the system menu.
3. Select CSC1 or CSC2.
4. Press [R], [G] or [B] buttons to display the monochrome color to adjust.
5. Display the monochrome red and adjust the luminance level finely by decreasing R–R of the brighter screen, according to the darkest screen, if the luminance differs between each screen. (If decreasing the luminance excessively, increase R–R.)
6. Adjust the tint on the monochrome red finely by increasing or decreasing R–G, R–B if the tint differs between each screen.
7. Display the monochrome green and adjust the luminance level finely by decreasing G–G of

the brighter screen, according to the darkest screen, if the luminance differs between each screen. (If decreasing the luminance excessively, increase G–G.)

8. Adjust the luminance level on the monochrome green finely by increasing or decreasing G–R, G–B, if the tint differs between each screen.
9. Display the monochrome blue and adjust the luminance level finely by decreasing B–B of the brighter screen, according to the darkest screen, if the luminance differs between each screen. (If decreasing the luminance excessively, increase B–B.)
10. Adjust the tint on the monochrome blue finely by increasing or decreasing B–R, B–G, if the tint differs between each screen.
11. Display yellow (red plus green) and adjust the tint finely by increasing or decreasing R-GAIN, G-GAIN (*), if the tint differs between each screen.
12. Display magenta (red plus blue) and adjust the tint finely by increasing or decreasing R-GAIN, B-GAIN (*), if the tint differs between each screen.
13. Display cyan (green plus blue) and adjust the tint finely by increasing or decreasing G-GAIN, B-GAIN (*), if the tint differs between each screen.
14. Display white and adjust the tint finely by increasing or decreasing R-GAIN, G-GAIN and B-GAIN (*).
15. Repeat the steps from 4) to 14) so to get uniform the luminance and tint of all the colors.

*) There are no value indication of R-GAIN, G-GAIN and B-GAIN. If you change them, related CSC values fluctuate in synchronization with the adjustment. In the case of R-GAIN, the values of R–R, R–G and R–B fluctuate to adjust luminance without changing color balance in red.

Be careful to adjust so that the sums of items: 1+4+7, 2+5+8, 3+6+9 in the following table should not be over 1,023 respectively.

CSC adjustment item

	Range	Menu	Adjustment value		Displayed color
			Increase	Decrease	
1	0 –1023	R–R	Increasing red luminance	Decreasing red luminance	Red, Yellow, Magenta, White
2	-255 – 255	R–G	Making red yellowy	Making red less yellowy	Red
3	-255 – 255	R–B	Making red bluish	Making red less bluish	Red
4	-255 – 255	G–R	Making green yellowy	Making green less yellowy	Green
5	0 –1023	G–G	Increasing green luminance	Decreasing green luminance	Green, Yellow, Cyan, White
6	-255 – 255	G–B	Making green bluish	Making green less bluish	Green
7	-255 – 255	B–R	Making blue reddish	Making blue less reddish	Blue
8	-255 – 255	B–G	Making blue greenish	Making blue less bluish	Blue
9	0 –1023	B–B	Increasing blue luminance	Decreasing blue luminance	Blue, Magenta, Cyan, White

1.5.4.4. WHITE BALANCE

This adjustment is normally unnecessary because the luminance and tint between screens can be adjusted in CSC.

This adjustment is required when the differences of luminance/tint level in white between screens are prominent after the CSC adjustment. Three memories: LOW, MIDDLE and HIGH can be used.

[Procedure]

1. Press [TEST] button three times to display the adjustment white.
2. Select WHITE BALANCE in INSTALLATION in the system menu.
3. Select HIGH, MIDDLE or LOW.
4. Adjust R, G and B values.

1.5.4.5. GRADATION

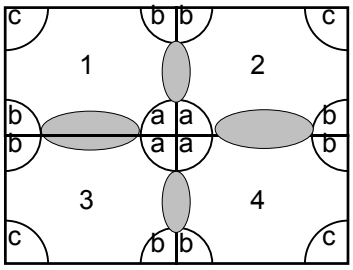
Used to adjust gradation if the differences of luminance/tint level between each screen are prominent.

Note: Set adequate values in consideration of the balance of brightness and uniformity. If you increase in the plus direction excessively, you have to decrease the total gain.

[Procedure]

(In the instance of a multi-screen consist of four screens)

1. Press [TEST] button three times to display the adjustment white.
2. Select GRADATION in INSTALLATION in the system menu.
3. Select WHITE, R, G or B to open gradation adjustment menu.
4. Adjust to match the luminance/tint level in the edge of adjacent screens (gray area in the lower left figure) using adjustment item A. In this time, adjust to align darker part with brighter, considering uniformity in a single screen.
5. Adjust to match the luminance/tint level in the 4 corners connecting area (area “a” in the lower right figure) using adjustment item B.
6. Adjust to match the luminance/tint level in the fringe of screens (area “b” and “c”). At first, adjust totally using adjustment item A and then compensate corner areas using item B.
7. Repeat the steps from 4 to 6 so as to uniform the luminance/tint level of all colors.



Gradation adjustment point

A	TOP	Top edge gradation
	BOTTOM	Bottom edge gradation
	LEFT	Left edge gradation
	RIGHT	Right edge gradation
B	TOP/LEFT	Top left corner gradation
	TOP/RIGHT	Top right corner gradation
	BOTTOM/LEFT	Bottom left corner gradation
	BOTTOM/RIGHT	Bottom right corner gradation

Gradation adjustment item

1.5.4.6. TARGET COLOR

TARGET COLOR can register CSC adjustment value, color wheel data and lamp data. Set it after adjustment of the luminance and tint between screens. If the lamp or color wheel is replaced, it can detect the replacement and automatically calculates optimum CSC values.

[Procedure]

1. Select SET TARGET COLOR in TARGET COLOR in MAINTENANCE in the system menu.
2. Press [ENTER] button in reply to “SET OK?” message.
3. The set timer value (set operating time) is displayed to indicate when TARGET COLOR is set.

1.5.4.7. SENSOR

SENSOR RUN can automatically correct the luminance to achieve uniformity in a multi-screen connected by control cables when the lamp brightness changes. Set it after adjustment of the luminance and tint between screens. When SENSOR is set RUN, WHITE BOOST should be set OFF.

Note:

- CSC, GRADATION and WHITE BALANCE cannot be adjusted during SENSOR RUN status.
- Just after SENSOR is set RUN, you may feel the brightness differs across the multi-screen. It comes from the automatic calculation to set gain values optimum (maximum limit) for adjusted CSC and gradation values (Gain optimizing function). The luminous sensor can detect the changing of brightness and maintain the uniformity over the long term.

At initial setting

[Procedure]

1. Set WHITE BOOST OFF.
2. Select SENSOR in MAINTENANCE in the system menu.
3. Select SET INITIAL SENSOR DATA and press [ENTER] button in reply to “SET OK?” message to obtain the SENSOR initial value.
4. Switch SENSOR OFF to SENSOR RUN by right arrow button.

Color balance readjustment after SENSOR RUN

If you adjust CSC, GRADATION or WHITE BALANCE after SENSOR RUN setting, SENSOR should be set STOP or OFF.

[Procedure when adjusting color balance of only specified projectors in a multi-screen]

1. Set SENSOR STOP on all projectors in the multi-screen.
2. Adjust color balance by CSC etc.
3. Set back to SENSOR RUN.

[Procedure when replacing all or almost lamps and adjusting color balance of the projectors in a multi-screen]

1. Set SENSOR OFF on all projectors.
2. Follow the same procedure as “At initial setting” described above.

1.5.5. Image set up

1.5.5.1. COLOR MATRIX:USER

Used to adjust the hue of RED, YELLOW, GREEN, CYAN, BLUE or MAGENTA respectively. Normally optimum option is automatically selected depending on the type of the input signal. It is available if you select USER setting in COLOR MATRIX (on page 36 or 44) in input memory.

[Procedure]

1. Select COLOR MATRIX:USER in INSTALLATION in the system menu.
2. Adjust RED, YELLOW, GREEN, CYAN, BLUE, MAGENTA or SATURATION.

Menu	Range	Adjustment value	
		Increase	Decrease
RED	-20 – 20	Making red yellowy	Making red bluish
YELLOW	-20 – 20	Making yellow greenish	Making yellow reddish
GREEN	-20 – 20	Making green bluish	Making green yellowy
CYAN	-20 – 20	Making cyan bluish	Making cyan greenish
BLUE	-20 – 20	Making blue reddish	Making blue greenish
MAGENTA	-20 – 20	Making magenta reddish	Making magenta bluish
SATURATION	-5 – 5	Making hue brighter	Making undertint

1.5.5.2. AMP GAIN (When ANALOG is input)

This adjustment is normally unnecessary.

Used to adjust the gain of analog signal input level in main unit as needed. **It is available toward all input memories.**

[Procedure]

1. Display full-white signal via actual input route.
2. Select AMP GAIN in INSTALLATION in the system menu.
3. Select AUTO GAIN and press [ENTER] button in reply to “AUTO GAIN START?” message. The adjustment will finish when “CALCULATE…” indication disappears.

[When “ERROR” is displayed]

The error message is displayed if the input signal level exceeds the adjustment range i.e. the level is too low or too high, or full-white signal is not input. In such cases, it is necessary to input signal with optimum level.

[Manual adjustment]

Normally AUTO GAIN adjustment is recommended. In special case such as full-white video signal cannot be input, the manual adjustment may be helpful.

1. Select AMP GAIN in INSTALLATION in the system menu.
2. Select MANUAL GAIN.
3. Adjust R/G/B-GAIN or R/G/B-LEVEL respectively.
   [NORMAL] button can reset it to the factory setting.

1.5.5.3. SCALER AMP GAIN (When S.ANALOG is input)

This adjustment is normally unnecessary.

Used to adjust the gain of analog signal input level in input board as needed. **It is available toward all input memories.**

[Procedure]

1. Display full-white video signal via actual input route.
2. Select SCALER AMP GAIN in INSTALLATION in the system menu.

From here, follow the same procedure as “AMP GAIN” in the previous chapter.

1.5.5.4. ADV.COL

Used to turn on/off the processing of the colors outside of the color range. When it is set ON, the area where the color is saturated is smoothed so that the image appears natural without solid colors. **Set the value on all projectors to be equal in a multi-screen.**

[Procedure]

1. Select ADV.COL in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.5.5. ADV.DARK

Used to turn on/off the function to adjust the image contrast to suit for bright ambient light. ON setting increases the apparent contrast of bleached image due to the room illumination for easy viewing. **Set the value on all projectors to be equal in a multi-screen.**

[Procedure]

1. Select ADV.DARK in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.5.6. GAMMA

This adjustment is normally unnecessary.

Used to make the entire image brighter or darker. This gamma correction adjusts the relation between the input level and the output level of the image signal. **Set the value on all projectors to be equal in a multi-screen.**

[Procedure]

1. Select GAMMA in MISC FUNCTION in the system menu.
2. Select the setting value from 1 to 5.
   As the value decreases, the perceived contrast increases. As the value increases, the luminance level of the middle tone area becomes brighter. Select the value so as to display the optimum image according to the luminance level of the middle tone area.

1.5.5.7. DITHER

Used to set dither. **Normally set ON.** It can increase the tone characteristics.

[Procedure]

1. Select DITHER in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.5.8. 3D Y/C (When COMPOSITE is input)

Used to turn on/off the three-dimensional Y/C separation circuit. **Normally set ON.** When it is set ON, it can display less dot interference image in NTSC signal from COMPOSITE terminal.

[Procedure]

1. Select 3D Y/C in MISC FUNCTION in the system menu.
2. Set ON or OFF.

1.5.5.9. WHITE BOOST

Used to boost the brightness utilizing white segment and blanking area of color wheel. **Normally set OFF.** When SENSOR is set RUN, WHITE BOOST should be set OFF. If you set other than OFF, follow the procedure below.

This boost function is not effective if the variation of brightness and tint of each screen is wide before CSC adjustment. It can be used only in the small multi-screen system.

[Procedure]

1. Adjust color balance (chapter 1.5.4, on page 26) in a state of WHITE BOOST OFF at first.
2. After the adjustment, display the adjustment white by pressing [TEST] button three times.
3. Select WHITE BOOST in MISC FUNCTION in the system menu.
4. Adjust white boost values as highly as possible so as to align the brightness of each screen.

If there is something wrong with the total quality when you display the contents that end users actually show in a multi-screen, select all white boost setting OFF. Also, if you cannot identify the end users' final contents, select it OFF.

1.6. Input memory setting (When the main unit input port is selected)

Be careful that the menu, when the main unit input is selected, is different from the one when the input board (VC-B20KA, VC-B20KV) is selected.

1.6.1. Selecting input port

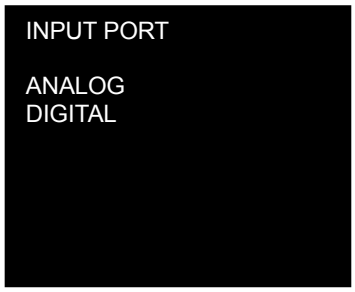
Input port can be selected while any menus or test patterns are not displayed.

[Procedure]

1. Press [INPUT A] button to display input port selecting menu.
2. Select the input port by up/down buttons and press [ENTER] button. Then input port changes.

To exit the menu, press [ESC] button.

The current selected input port can be checked in any other adjustment menu in advanced mode.



Input port selecting menu

1.6.2. Automatic input signal scanning

[NORMAL] button executes automatic input signal scanning during the menu 1 displaying.

The automatic scanning can search and display the signal that accords with the sync signal frequency in the default memory (preset supported signals) and already registered input memories. The following table is the supported signal list in main unit input port.

Computer/signal	Resolution	Line rate (kHz)	Frame rate (Hz)
IBM PC/AT compatible	640 x 480	31.47	59.94
	800 x 600	35.16	56.25
	800 x 600	37.88	60.32
	1024 x 768	48.36	60.00
	1280 x 960	60.00	60.00
	1280 x 1024	63.98	60.02

If more than one signal has the same frequency, the selected signal will be switched every time [NORMAL] button is pressed. If an incorrect image is displayed, perform the signal adjustment (chapter 1.6.3, on page 34).

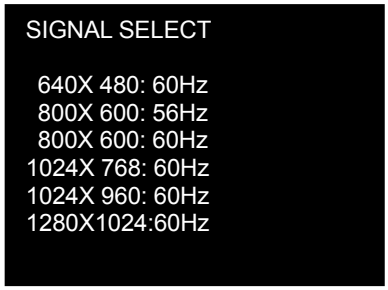
After repeating the automatic scanning and signal adjustment several times, if a correct image is not displayed, that means the signal is not supported.

When it is apparently clear that the input signal matches the supported signal list, it can be selected according to the following procedure.

[Procedure]

1. Select SIGNAL SELECT in the menu 1.
2. Select the signal that matches the input signal by up/down buttons.

Note: Only listed signal can be scaled correctly. An interlace signal is not supported.



1.6.3. Signal adjustment

1.6.3.1. H.POSITION, V.POSITION

Used to adjust the image position to minimize the no signal area on the upper left of the screen when the image position is incorrect.

[Procedure]

1. Select H.POSITION in the menu 1.
2. Set the maximum value not to display the no signal area on the upper left of the screen.
3. Select V.POSITION in the menu 1.
4. Set the maximum value not to display the no signal area on the upper left of the screen.

1.6.3.2. H.TOTAL, FINE (When ANALOG is input)

Used to adjust H.TOTAL when vertically striped noise or jitter noise appears on the image, or the whole effective area cannot be displayed after image position adjustment. If the horizontal position of the image shifts after H.TOTAL adjustment, adjust H.POSITION again.

[Procedure]

1. Select H.TOTAL in the menu 1.
2. Adjust to eliminate the vertically striped noise.
3. Press [ESC] button and select FINE in the menu 1.
4. Adjust to eliminate the jitter noise.

If the jitter noise cannot be improved by H.TOTAL and FINE adjustment, adjust CLOCK RANGE (chapter 1.6.3.5).

1.6.3.3. CLAMP (When ANALOG is input)

Adjust it only when the following problem occurs.

Used to adjust clamp pulse position and width according to the timing of input signal, when the whole image is darkened or horizontal uneven brightness appears on the image.

CLAMP is automatically set to the optimum value when you set CLAMP START=0, CLAMP WIDTH=0.

[Procedure]

1. Select CLAMP START in the menu 1.
2. Adjust the clamp pulse start position according to the timing of the input signal.
3. Select CLAMP WIDTH in the menu 1.
4. Adjust the clamp pulse width according to the timing of the input signal.

1.6.3.4. SYNC SELECT (When ANALOG is input)

While 5-line (separate sync) or 4-line (composite sync) signal is input with sync on green, the clamp pulse on the green channel cannot be adjusted. In this case, follow the procedure below to set sync on green.

[Procedure]

1. Select SYNC SELECT in the menu 1.
2. Select SOG.

1.6.3.5. CLOCK RANGE (When ANALOG is input)

This adjustment is normally unnecessary since optimum value is automatically selected when H.TOTAL is changed.

If the jitter noise cannot be improved by H.TOTAL and FINE adjustment, CLOCK RANGE fine adjustment may improve it.

[Procedure]

1. Select CLOCK RANGE in the menu 1.
2. Adjust to eliminate the jitter noise by left/right buttons.

1.6.3.6. AMP GAIN (When ANALOG is input)

Used to adjust the gain of analog signal input level as needed. **It is available for each input memory.**

[Procedure]

1. Display full-white signal via actual input route.
2. Select AMP GAIN in the menu 1.
3. Select AUTO GAIN and press [ENTER] button in reply to “AUTO GAIN START?” message. The adjustment will finish when “CALCULATE…” indication disappears.

[When “ERROR” is displayed]

The error message is displayed if the input signal level exceeds the adjustment range like the level is too low or too high, or full-white signal is not input. In such cases, it is necessary to input signal with optimum level.

[Manual adjustment]

Normally AUTO GAIN adjustment is recommended. In special case such as full-white video signal cannot be input, the manual adjustment may be helpful.

1. Select AMP GAIN in the menu 1.
2. Select MANUAL GAIN.
3. Adjust R/G/B-GAIN or R/G/B-LEVEL respectively.
   [NORMAL] button can reset it to the AMP GAIN value in the system memory (chapter 1.5.5.2, on page 30). If it has not been set, the value is reset to the factory setting.

1.6.4. Image quality adjustment

You can adjust the following items as needed.

Note: Set the each value on all projectors to be equal in a multi-screen.

1.6.4.1. CONTRAST

Used to adjust the contrast. Note that darkening the image excessively deteriorates the tone characteristics of darker part of the image.

[Procedure]

1. Select CONTRAST in the menu 1.
2. Adjust the value by left/right buttons.

1.6.4.2. BRIGHTNESS

Used to adjust the brightness. Be noted that darkening the image excessively deteriorates the tone characteristics of darker part of the image.

[Procedure]

1. Select BRIGHTNESS in the menu 1.
2. Adjust the value by left/right buttons.

1.6.4.3. COLOR MATRIX

Used to set the hue of the colors to suit the preferences of users. In most cases, the optimum option (VIDEO or COMPUTER) is automatically selected depending on the type of the input signal.

- OFF: Select to turn off the color matrix function.
- VIDEO: Select when a motion image is input.
- COMPUTER: Select when a signal is input from a computer.
- USER: Select a manual adjusted color matrix setting. For the detail adjustment, see “1.5.5.1 COLOR MATRIX:USER” on page 30.

[Procedure]

1. Select COLOR MATRIX in the menu 1.
2. Select OFF, VIDEO, COMPUTER or USER.

1.6.4.4. APERTURE

Used to perform the image edge enhancement to emphasize characters etc. in the input image.

[Procedure]

1. Select APERTURE in the menu 1.
2. Adjust the value by left/right buttons.

1.6.4.5. SCALING FILTER

Used to set the scaling filter in the main unit input signal. If jagged character outlines are noticeable, setting “1” makes it smooth. Setting “0” sharpens the displays, especially in the scaled down images. The initial setting is 1.

[Procedure]

1. Select SCALING FILTER in the menu 1.
2. Adjust the value by left/right buttons.

1.6.5. Input memory saving

The adjusted values can be saved in the input memory. The number of memories is 128.

Note: Be sure to save newly adjusted signal even if the same resolution signal already exists in the memory. If the FINE or POSITION, etc. settings are different from it, save the signal in another input memory number.

[Procedure]

1. Press [ESC] button during the menu 1 displaying to show “SAVE THE CHANGES?” message. And select YES in reply to it. To exit the menu without saving, select NO or press [ESC].
2. Designate the memory number by left/right buttons and press [ENTER] button to save.
3. The current setting will be saved in the memory if the number is unregistered. If it has already been registered, the overwrite confirmation message will be displayed.
4. If you don’t save it, press [ESC] button to exit the menu.

1.6.6. Input memory calling/deleting

Registered input memory can be called and deleted when needed.

- Call: Press [MEM LIST] button and select INPUT MEMORY. Designate the memory number to call by left/right buttons and press [ENTER] button.
- Delete: Press [MEM LIST] button and select INPUT MEMORY. Designate the memory number to delete by left/right buttons and press [ENTER] button. Select DELETE MEMORY by up/down buttons and press [ENTER] button.

1.7. Input memory setting (When the input board is selected)

1.7.1. Selecting input port

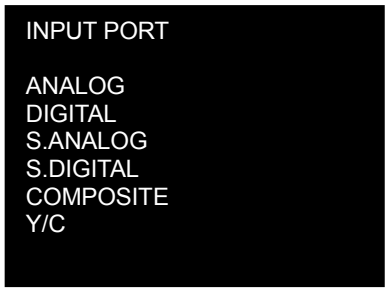
Input port can be selected while any menus or test patterns are not displayed.

[Procedure]

1. Press [INPUT A] button to display input port selecting menu.
2. Select the input port by up/down buttons and press [ENTER] button. Then input port changes.

To exit the menu, press [ESC] button.

The current selected input port can be checked in any other adjustment menu in advanced mode.



Input port selecting menu

Note:

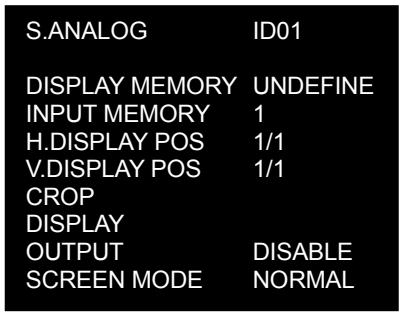
- When the input board, VC-B20KA is attached, S.ANALOG and S.DIGITAL can be selected.
- When the input board, VC-B20KV is attached, COMPOSITE and Y/C can be selected.

1.7.2. Expansion setting

It is necessary to set the horizontal and vertical expansion rate at 100 % before adjusting the input signal, since you need to verify the adjustment result by displaying the effective input signal area on the screen.

[Procedure]

1. Select DISPLAY in the menu 2.
2. Select H.DISPLAY POS. and change it to 1/1 by left/right button.
3. Select V.DISPLAY POS. and change it to 1/1 by left/right button.



DISPLAY menu

Note: If H.SIZE or V.SIZE (chapter 1.7.4.2, on page 40) in the menu 1 (page 1) is changed, H.DISPLAY POS and V.DISPLAY POS should be readjusted to 1/1.

1.7.3. Automatic input signal scanning

[NORMAL] button executes automatic input signal scanning during the menu 1 displaying.

The automatic scanning can search and display the signal that accords with the sync signal frequency in the default memory (preset supported signals) and already registered input memories. If more than one signal has the same frequency, the selected signal will be switched every time [NORMAL] button is pressed. Also in the case that incorrect image is displayed, press [NORMAL] button again to reselect other candidates.

If the signal does not match, the following items in the menu 1 have to be adjusted.

1.7.3.1. SIGNAL SELECT (When COMPOSITE or Y/C is input)

Adjust it when incorrect image is displayed after automatic input signal scanning.

It can designate the input signal type that already exists in the default memory.

[Procedure]

1. Select SIGNAL SELECT in the menu 1 (page 1).
2. Select the input video signal type. If you select AUTO, the signal is automatically set.

Note: In the case of S.ANALOG and S.DIGITAL input, SIGNAL SELECT menu cannot be adjusted.

SIGANL SELECT menu

1.7.3.2. SIGNAL TYPE (When S.ANALOG or S.DIGITAL is input)

Adjust it when incorrect image is displayed after automatic input signal scanning.

It can switch the input signal type, RGB or YUV signal.

[Procedure]

1. Select SIGNAL TYPE in the menu 1 (page 4 or 2).
2. Select RGB or YUV according to the input signal.

1.7.3.3. H.TOTAL (When S.ANALOG is input)

Adjust it when incorrect image is displayed after automatic input signal scanning.

It can adjust the total dot number in the horizontal direction of the input signal. If H.TOTAL value is incorrect, vertically striped noise or jitter noise appears on the image.

[Procedure]

1. Select H.TOTAL in the menu 1 (page 3).
2. Adjust the value by left/right buttons.

Note: If you change H.TOTAL, you may have to readjust H.POSITION (chapter 1.7.4.1, on page 40).

1.7.4. Signal adjustment

1.7.4.1. H.POSITION, V.POSITION

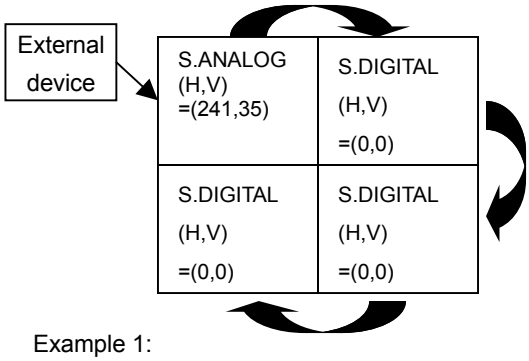
Used to adjust the image position to minimize the no signal area on the upper left of the screen when the image position is incorrect.

[Procedure]

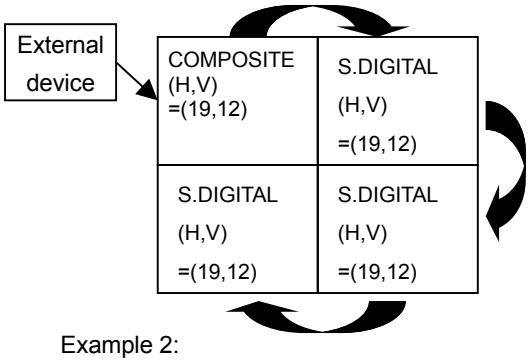
1. Select H.POSITION in the menu 1 (page 1).
2. Set the maximum value to avoid having a no signal area on the upper left of the screen.
3. Select V.POSITION in the menu 1 (page 1).
4. Set the maximum value to avoid having a no signal area on the upper left of the screen.

In the case of S.DIGITAL input, adjust the position as follows.

- When the digital signal is input from external input device like a PC, H.POSITION and V.POSITION should be set (0,0).
- When the external input source is S.ANALOG or S.DIGITAL in daisy-chained multi-screen, H.POSITION and V.POSITION should be set (0,0). (Example 1)
- When the external input source is COMPOSITE or Y/C in daisy-chained multi-screen, H.POSITION and V.POSITION should be set same values as the projector, which has the signal from an external device. (Example 2)



Example 1:
The position setting when the external input source is S.ANALOG in daisy-chained multi-screen



Example 2:
The position setting when the external input source is COMPOSITE in daisy-chained multi-screen

1.7.4.2. H.SIZE, V.SIZE

Used to adjust the effective area size of the input image when the image size is incorrect after H.TOTAL (in the case of S.ANALOG input) and H.POSITION, V.POSITION adjustment.

[Procedure]

1. Select H.SIZE in the menu 1 (page 1).
2. Adjust the horizontal size of input signal.
3. Select V.SIZE in the menu 1 (page 1).
4. Adjust the vertical size of input signal.

Note: If H.SIZE or V.SIZE is changed, H.DISPLAY POS and V.DISPLAY POS in the menu 2 should be readjusted to 1/1 （chapter 1.7.2, on page 38）.

1.7.4.3. FRAME LOCK

This adjustment is normally unnecessary since it is automatically set in automatic input signal scanning.

Used to select frame lock setting when frame tearing or field skips are noticeable in a moving image. Set ON when input signal is a moving image and has 50 – 60 Hz of the vertical scanning frequency.

- ON: Internal synchronization to synchronize the frame to the input signal.
- OFF: External synchronization mode to convert the frame rate.

[Procedure]

1. Select FRAME LOCK in the menu 1 (page 1).
2. Select ON or OFF.

1.7.4.4. SCAN MODE (When S.ANALOG or S.DIGITAL is input)

This adjustment is normally unnecessary since it is automatically set in automatic input signal scanning.

Used to select scan mode as needed when interlace signal is input.

[Procedure]

1. Select SCAN MODE in the menu 1 (page 1).
2. INTERLACE adjustment
   - OFF: Select when non-interlace signal is input.
   - STATIC: Select when interlace signal is input to display still image.
   - MOTION: Select when interlace signal is input to display motion image.

   Note: STATIC and MOTION menus are available only when interlace signal is input from S.ANALOG or S.DIGITAL.
3. F-INVERT adjustment

   It can inverse even/odd fields when cross lines on the image are jagged. It is available only when interlace signal is input from S.ANALOG or S.DIGITAL.
   - ON： Inversing even/odd fields when interlace signal is input.
   - OFF： NOT inversing even/odd fields when interlace signal is input.

1.7.4.5. FINE (When S.ANALOG is input)

Used to adjust so that noise on the output image will be minimized. The adjusting range is -32 – 31 in S.ANALOG input (-16 – 15 in ANALOG input).

[Procedure]

1. Select FINE in the menu 1 (page 3).
2. Adjust the value so that noise on the output image will be minimized.

If the noise cannot be improved by FINE, adjust SYNC SELECT (chapter 1.7.4.8, on page 42).

1.7.4.6. CLAMP (When S.ANALOG is input)

Adjust it only when the following problem occurs.

Used to adjust clamp pulse position and width according to the timing of input signal, when the whole image is darkened or horizontal uneven brightness appears on the image.

CLAMP is automatically set to the optimum value when you set CLAMP START=0, CLAMP WIDTH=0.

[Procedure]

1. Select CLAMP START in the menu 1 (page 3).
2. Adjust the clamp pulse start position according to the timing of the input signal.
3. Select CLAMP WIDTH in the menu 1 (page 3).
4. Adjust the clamp pulse width according to the timing of the input signal.

1.7.4.7. MASK

Adjust it only when the following problem occurs.

Used to adjust when the upper or lower part of the image is distorted while 3-line signal (sync on green) or 4-line signal (composite sync) is input.

[Procedure]

1. Select MASK START in the menu 1 (page 3).
2. Set the maximum value that resolves the image distortion.
3. Select MASK END in the menu 1 (page 3).
4. Set the minimum value that resolves the image distortion.

1.7.4.8. SYNC SELECT (When S.ANALOG is input)

This adjustment is normally unnecessary since it is automatically set in automatic input signal scanning.

In the case of 5-line input (separate sync), if HD/VD is selected, FINE may be adjusted more easily. While 5-line (separate sync) or 4-line (composite sync) signal is input with sync on green, the clamp pulse on the green channel cannot be adjusted. In this case, follow the procedure below to set sync on green.

- AUTO: Select to set optimum signal automatically.
- HD/VD: Select when 5-line signal is input.
- SOG: Select when sync on green signal is input.

[Procedure]

1. Select SYNC SELECT in the menu 1 (page 4).
2. Select AUTO, HD/VD or SOG.

1.7.4.9. CLOCK RANGE (When S.ANALOG is input)

This adjustment is normally unnecessary since the optimum value is automatically selected when H.TOTAL is changed.

Used to set the dot clock frequency of input signal. The displayed numbers and corresponding dot clock frequencies are shown in fallowing tables.

[Procedure]

1. Select CLOCK RANGE in the menu 1 (page 4).
2. Adjust the value by left/right buttons.

CLOCK RANGE	5	6	7	8	9	10	11
Dot clock [MHz]	21.25 – 27.5	27.5 – 35	35 – 38.75	38.75 – 40	40 – 42.5	42.5 – 55	55 – 70

CLOCK RANGE	12	13	14	15	16	17	18
Dot clock [MHz]	70 – 77.5	77.5 – 80	80 – 85	85 – 110	110 – 140	140 – 155	155 – 165

1.7.4.10. AMP. GAIN (When S.ANALOG is input)

You can adjust the gain of analog signal input level as needed. **It is available for each input memory.** It cannot be adjusted when input signal is YUV signal.

[Procedure]

1. Display full-white signal via actual input route.
2. Select AMP GAIN in the menu 1 (page 4).
3. Select AUTO GAIN and press [ENTER] button in reply to “AUTO GAIN START?” message. The adjustment will finish when “CALCULATE…” indication disappears.

[When “ERROR” is displayed]

The error message is displayed if the input signal level exceeds the adjustment range like the level is too low or too high, or full-white signal is not input. In such cases, it is necessary to input signal with optimum level.

[Manual adjustment]

Normally AUTO GAIN adjustment is recommended. In special case such as full-white video signal cannot be input, the manual adjustment may be helpful.

1. Select AMP GAIN in the menu 1 (page 4).
2. Select MANUAL GAIN.
3. Adjust R/G/B-GAIN or R/G/B-LEVEL respectively.
   [NORMAL] button can reset it to the SCALER AMP GAIN value in the system memory (chapter 1.5.5.3, on page 31). If it has not been set, the value is reset to the factory setting.

1.7.5. Image quality adjustment

You can adjust the following items as needed.

Note: Set the each value on all projectors to be equal in a multi-screen.

1.7.5.1. CONTRAST

Used to adjust the contrast. Please note darkening the image excessively deteriorates the tone characteristics of darker part of the image.

[Procedure]

1. Select CONTRAST in the menu 1 (page 2).
2. Adjust the value by left/right buttons.

1.7.5.2. BRIGHTNESS

Used to adjust the brightness. Please note that darkening the image excessively deteriorates the tone characteristics of darker part of the image.

[Procedure]

1. Select BRIGHTNESS in the menu 1 (page 2).
2. Adjust the value by left/right buttons

1.7.5.3. COLOR MATRIX

Used to set the hue of the colors to suit the preferences of users. In most cases, the optimum option (VIDEO or COMPUTER) is automatically selected depending on the type of the input signal.

- OFF: Select to turn off the color matrix function.
- VIDEO: Select when a motion image is input.
- COMPUTER: Select when a signal is input from a computer.
- USER: Select a manual adjusted color matrix setting. For the detail adjustment, see “1.5.5.1 COLOR MATRIX:USER” on page 30.

[Procedure]

1. Select COLOR MATRIX in the menu 1 (page 2).
2. Select OFF, VIDEO, COMPUTER or USER.

1.7.5.4. APERTURE

Used to perform the image edge enhancement to emphasize characters etc. in the input image.

[Procedure]

1. Select APERTURE in the menu 1 (page 2).
2. Adjust the value by left/right buttons.

1.7.5.5. ASPECT-RATIO

This adjustment is normally unnecessary since it is automatically set in automatic input signal scanning.

It is available if SCREEN MODE (chapter 1.8.6, on page 49) in the menu 2 is set NORMAL or TRIMMING.

- 4:3 : The image is displayed at the aspect ratio of 4:3.
- 5:4 : The image is displayed at the aspect ratio of 5:4.
- 16:9 : The image is displayed at the aspect ratio of 16:9.

[Procedure]

1. Select ASPECT-RATIO in the menu 1 (page 2).
2. Select 4:3, 5:4 or 16:9.

1.7.5.6. SCALING FILTER

Used to set the scaling filter in the input board signal. If jagged character outlines are noticeable, setting “1” or “2” makes it smooth. “2” makes softer image. Setting “0” sharpens the displays, especially when displaying high resolution image such as UXGA signal or scaled down images. The initial setting is 1.

[Procedure]

1. Select SCALING FILTER in the menu 1 (page 2).
2. Adjust the value by left/right buttons.

1.7.5.7. COLOR (When COMPOSITE or Y/C is input)

Used to adjust the color depth of the image. [NORMAL] button can reset it to the factory setting.

[Procedure]

1. Select COLOR in the menu 1 (page 3).
2. Adjust the value by left/right buttons.

1.7.5.8. TINT (When COMPOSITE or Y/C is input)

Used to adjust the hue of the image. It is effective only for NTSC signal. [NORMAL] button can reset it to the factory setting.

[Procedure]

1. Select TINT in the menu 1 (page 3).
2. Adjust the value by left/right buttons.

1.7.5.9. SHARPNESS (When COMPOSITE or Y/C is input)

Used to adjust to sharpen or soften the image. Be noted that increasing the value excessively causes noise on the image. [NORMAL] button can reset it to the factory setting.

[Procedure]

1. Select SHARPNESS in the menu 1 (page 3).
2. Adjust the value by left/right buttons.

1.7.5.10. VCR MODE (When COMPOSITE or Y/C is input)

Used to set the VCR mode ON when an image from a particular VCR cannot be displayed correct colors. Normally set OFF.

[Procedure]

1. Select VCR MODE in the menu 1 (page 3).
2. Select ON or OFF.

1.7.6. Input memory registration

The adjusted values can be saved in the input memory. The number of memories is 128.

Note: Be sure to save newly adjusted signal even if the same resolution signal already exists in the memory. If the FINE or POSITION, etc. settings are different from it, save the signal in another input memory number.

[Procedure]

1. Press [ESC] button during the menu 1 displaying to show “SAVE THE CHANGES?” message. And select YES in reply to it. To exit the menu without saving, select NO or press [ESC].
2. Designate the memory number by left/right buttons and press [ENTER] button to save.
3. The current setting will be saved in the memory if the number is unregistered. If it has already been registered, the overwrite confirmation message will be displayed.
4. If you don’t save it, press [ESC] button to exit the menu.

1.7.7. Input memory calling/deleting

Registered input memory can be called and deleted when needed.

- Call: Press [MEM LIST] button and select INPUT MEMORY. Designate the memory number to call by left/right buttons and press [ENTER] button.
- Delete: Press [MEM LIST] button and select INPUT MEMORY. Designate the memory number to delete by left/right buttons and press [ENTER] button. Select DELETE MEMORY by up/down buttons and press [ENTER] button.

1.8. Display memory setting

Used to set the output image on screen when it is used as a multi-screen or the display position of the output image requires some adjustments.

There is no need to register the display memory when the input board is not attached. In this case, the menu 2 for the memory setting up is not displayed.

Note: Even if the adjusted values in input memory via the input board are the same as the ones via the main unit, the display memory is required to save newly.

1.8.1. INPUT MEMORY

Used to designate the input image signal saved in the input memory.

[Procedure]

1. Select INPUT MEMORY in DISPLAY in the menu 2.
2. Select the input memory.
3. Press [ENTER] button to call the input memory.

- If you don't call it, the setting goes back to the last saving value.
- It is unnecessary to change if the setting is not changed. Current input memory number is called at first.
- If input memory has not been saved, it displays "UNDEFINE". In this case, the display memory cannot be saved. Save the input memory first.

1.8.2. H.DISPLAY POS, V.DISPLAY POS

Used to adjust the position and expansion ratio on the multi-screen.

[Procedure]

1. Select DISPLAY in the menu 2.
2. Set the values of H.DISPLAY POS. and V. DISPLAY POS. The "n" of parameter n/m indicates the panel position in the vertical and horizontal direction. The "m" indicates the total number of screens in the directions.

   For the detail setting in the case of daisy-chained multi-screen, see "1.9 Setting as daisy chain connection" on page 50.

1.8.3. CROP

This adjustment is normally unnecessary since it will be automatically renewed when H./V. DISPLAY POS. are changed.

Used to set the starting position of the actual display area from the effective input signal area by manual. The adjustment is required in a specific case as displaying a contents in the partial area of input signal.

- H.POSITION: The horizontal starting position of the actual display area.
- V.POSITION: The vertical starting position of the actual display area.
- H.SIZE: The horizontal size of actual display area.
- V.SIZE: The vertical size of actual display area.

[Procedure]

1. Select CROP in DISPLAY in the menu 2.
2. Adjust each item.

Note: It will be automatically renewed when H./V. DISPLAY POS. are changed.

1.8.4. DISPLAY

This adjustment is normally unnecessary since it will be automatically renewed when H./V. DISPLAY POS. are changed.

Used to designate the actual display area on the screen manually. The adjustment is required in a specific case.

- H.POSITION: The horizontal starting position of the effective area.
- V.POSITION: The vertical starting position of the effective area.
- H.SIZE: The horizontal size of the effective area. Normally align it with the pixel size of input signal. If there are some noises in the side of the image, adjust it to be fine.
- V.SIZE: The vertical size of the effective area. Normally align it with the pixel size of input signal. If there are some noises in the top or bottom of the image, adjust it to be fine.

[Procedure]

1. Select DISPLAY in DISPLAY in the menu 2.
2. Adjust each item.

Note: It will be automatically renewed when H./V. DISPLAY POS. are changed.

1.8.5. DIGITAL OUT

Used to set the signal to be output from the digital output terminal. It is required in the case of a daisy-chained multi-screen. 1-line signal can be optionally selected from the signal via the input board. The registered input memory is required to output the signal from digital output terminal for daisy chain.

Note: The signal via the main unit cannot be designated as digital out. Also, It is unable to designate the different input memory from same input signal cannot be designated as both digital out and on screen display simultaneously. It is the same with COMPOSITE and Y/C.

- DISABLE: Nothing to be output.
- SCREEN: Digital output current on screen image.
- 1 – 128: Digital output the designated input signal. The adjustment items saved in the input memory among input memory 1 – 128 are reflected on the output signal.

[Procedure]

1. Select DIGITAL OUT in DISPLAY in the menu 2.
2. Select the signal to be output from digital output terminal.

1.8.6. SCREEN MODE

Used to set the screen mode when a signal with other than 4:3 aspect ratio, as HDTV or SXGA signal, is input. If it has the 4:3 aspect ratio, the displaying doesn't change.

- NORMAL: The original aspect ratio is maintained and the whole image is displayed at the center of the screen. The margins are displayed black.
- TRIMMING: The original aspect ratio is maintained and the center of the image is enlarged filling the entire screen. When an HDTV image with 16:9 aspect ratio is displayed, the right and left edges of the image are cut. When an SXGA image with 5:4 aspect ratio is displayed, the top and the bottom of the image are cut.
- FULL: The aspect ratio is adjusted o fill the whole image in the entire screen. The image with 16:9 aspect ratio appears stretching vertically. The image with 5:4 aspect ratio appears stretching horizontally.

[Procedure]

1. Select SCREEN MODE in DISPLAY in the menu 2.
2. Select the screen mode option.

Note: Even if the effective image area is 16:9, when ASPECT-RATIO (chapter 1.7.5.5, on page 44) is set 4:3, the SCREEN MODE doesn't change the display since the image is processed as 4:3.

1.8.7. Display memory saving

The adjusted values can be saved in the display memory. The number of memories is 256.

Note: The registered input memory is required when you save the display memory. If the input memory has not been registered, register it before the display memory registration.

[Procedure]

1. Press [ESC] button during the menu 2 displaying to show "SAVE THE CHANGES?" message. And select YES in reply to it. To exit the menu without saving, select NO or press [ESC].
2. Designate the memory number by left/right buttons and press [ENTER] button to save.
3. The current setting will be saved in the memory if the number is unregistered. If it has already been registered, the overwrite confirmation message will be displayed.
4. If you don't save it, press [ESC] button to exit the menu.

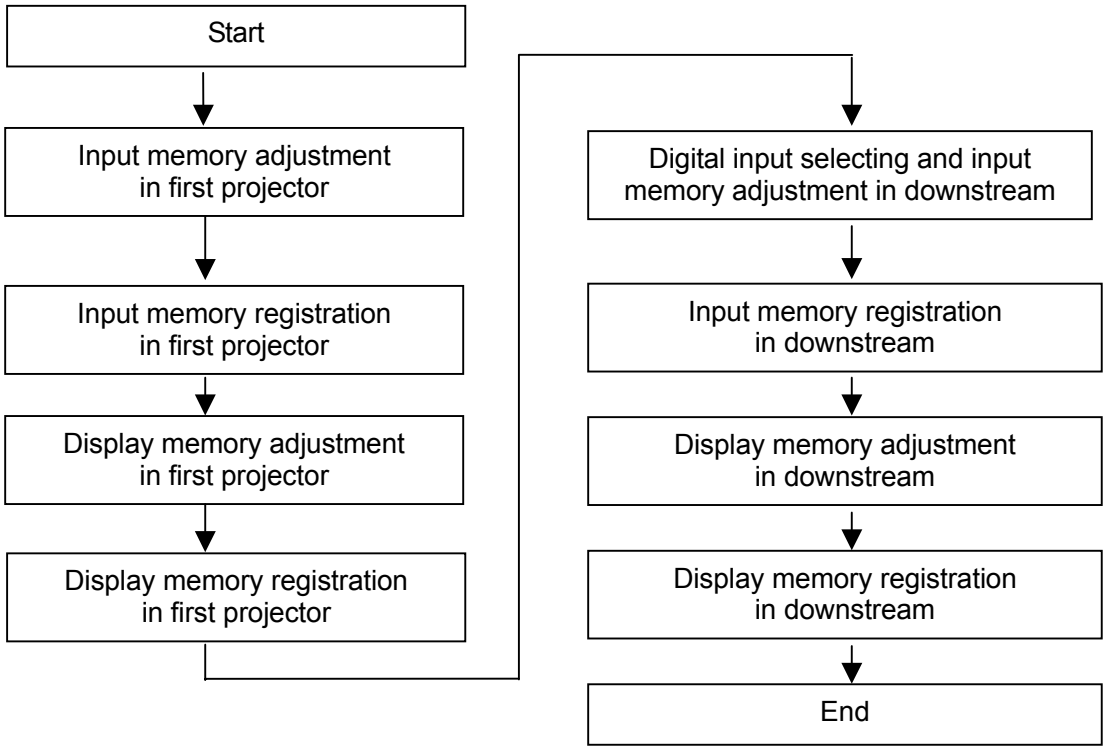
1.8.8. Display memory calling/deleting

Registered display memory can be called and deleted when needed.

- Call: Press [MEM LIST] button and select DISPLAY MEMORY. Designate the memory number to call by left/right buttons and press [ENTER] button. It can be called directly when 3-digit number is input by number buttons in remote control. If you call the display memory 1, press 001.
- Delete: Press [MEM LIST] button and select DISPLAY MEMORY. Designate the memory number to delete by left/right buttons and press [ENTER] button. Select DELETE MEMORY by up/down buttons and press [ENTER] button.

1.9. Setting as daisy chain connection

The adjustment procedure of daisy-chained multi-screen is shown in the following flowchart. The downstream projectors, which receive digital signal in a multi-screen, should be adjusted after adjusting the first projector, which receives a signal from external device. The first and downstream projectors in daisy-chained multi-screen cannot be adjusted in the same time. The digital input of downstream projectors cannot be defined without digital output of the first projector.


Start
Input memory adjustment in first projector
Input memory registration in first projector
Display memory adjustment in first projector
Display memory registration in first projector
Digital input selecting and input memory adjustment in downstream
Input memory registration in downstream
Display memory adjustment in downstream
Display memory registration in downstream
End

Daisy-chained multi-screen adjustment flowchart

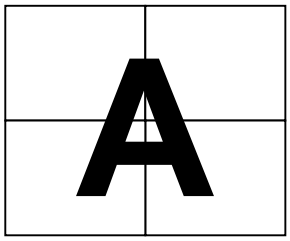
[Procedure]

1. Save the input memory and display memory of the first projector according to “1.7 Input memory setting (When the input board is selected)” on page 38 and “1.8 Display memory setting” on page 47.
2. Select DIGITAL input as the input port of downstream projectors according to “1.7.1 Selecting input port” on page 38.
3. Save the input memory and display memory of downstream in the same way as the first projector. Normally it is unnecessary to change the input signal position since it is automatically set by automatic input signal scanning (chapter 1.7.3, on page 38). Make certain that same images are displayed on each screen as following example.

A	A
A	A

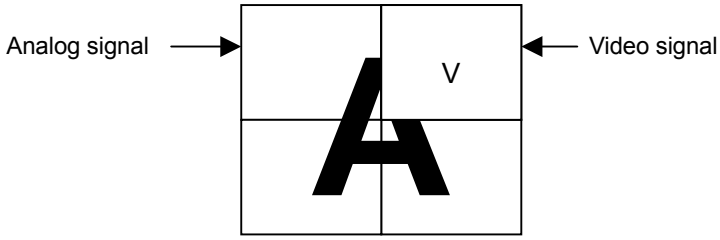
4. Set the position and expansion ratio (“1.8.2 H.DISPLAY POS, V.DISPLAY POS” on page47) again to fit the system in reference to the following setting sample in left side. Check the displaying to be as the example in right side.

H=1/2 V=1/2	H=2/2 V=1/2
H=1/2 V=2/2	H=2/2 V=2/2



5. Set SCREEN MODE as needed.
6. Save the display memory of each screen in different as number from previous saving.
7. Check the image linkage between screens. If it is insufficient, you can adjust finely by OFFSET (chapter 1.5.3.7, on page 23). If you adjust it by display memory setting, the linkage condition may change when you display other images.

You can also display such as below.



It is an example that analog signal A is input to panel 1 (upper left) and video (COMPOSITE) signal V is input to panel 2 (upper right) and each screen is connected by daisy chain.

[Procedure]

8. Select COMPOSITE input as the input port of panel 2 according to “1.7.1 Selecting input port” on page 38.
9. Adjust the input memory setting of panel 2. Normally it is unnecessary to adjust when video input is selected.
10. Save the input memory of panel 2 in different as number from previous saving.
11. Set the display memory of panel 2 as below.
    INPUT MEMORY: Designate the input memory of video input set in the step 10.
    H.DISPLAY POS.: 1/1
    V.DISPLAY POS.: 1/1
    DIGITAL OUT: Designate the input memory of digital input set in the step 3.
12. Make certain to display the video signal V on panel 2 as described above.
13. Save the display memory of panel 2 in different number from previous saving.

1.10. Lamp replacement

This projector is equipped with lamp(s) to project images utilizing the DMD™ chip.
The lamp is a consumable. It may burn out or the brightness may decrease during operation. In such cases, replace the lamp with a new one as soon as possible. When the lamp doesn't illuminate any more, a blue light blinks on the screen and status indicator in the control panel shows "1." (chapter 2.4, on page 70).
VS-50XLW20U can detect the lamp failure or brightness deterioration and then swaps it for spare lamp automatically (Auto-lamp changing function: in chapter 1.10.3, on page 59). "☀" mark starts blinking on the screen. In such cases, replace the lamp with a new one soon. If the spare lamp is also failed one, the blue light blinks on the screen and the status indicator shows "1.".
Be sure to use optional lamp specified for the product.

The part number of the lamp used in VS-50XL20U and VS-67XL20U is S-XL20LA.
The part number of the lamp used in VS-50XLW20U is S-XH20LA.

1.10.1. Safety precautions

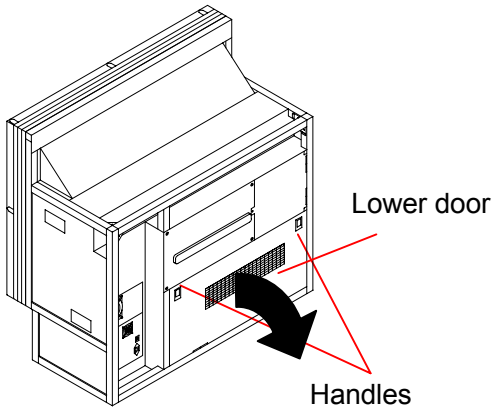
- Be sure to turn off the main power switch and unplug the power cord from the wall outlet before replacing the lamp. Lamp replacement without turning off the main power may result in electric shock.
- Do not put metal or flammable object into the projector. Using the projector with any foreign object inside may result in electric shock or fire.
- Insert the lamp firmly. When the lamp isn't installed properly, it won't illuminate. Improper installation may result in fire.
- The lamp gets very hot during operation. Do not replace the lamp immediately after operation because you may get burned or injured. Before replacing the lamp, turn off the power to extinguish the lamp and wait about one minute for the cooling fan to stop. Then turn off the main power switch, unplug the power cord from the wall outlet, and wait at least one hour to allow the lamp to cool down enough to the touch.
- Replace the lamp with drawing on thick glove. The lamp is heated for a while even if the lamp is turned off.
- A high-pressure mercury lamp is used as the light source of this projector. The high-pressure mercury lamp can explode or fail to illuminate permanently because of an impact, scratch, or deterioration through use. The period of time until explosion or permanent failure to illuminate varies considerably from lamp to lamp depending on operation conditions, etc. Therefore, the lamp may explode soon after you use it for the first time.
- Do not shake the removed lamp or do not lift it above your face. You may be injured in your eye by flying or falling glass fragments.
- When you open the doors or lamp cover for the purpose of lamp replacement, do not touch any parts inside that are not necessary for lamp replacement because you may get injured or a failure may occur.
- Do not open the doors for lamp replacement or lamp cover during operation. Unnecessary opening of the doors may result in a failure.
- Do not remove screws other than specified. Removal of unspecified screws may result in a failure.

1.10.2. Procedure

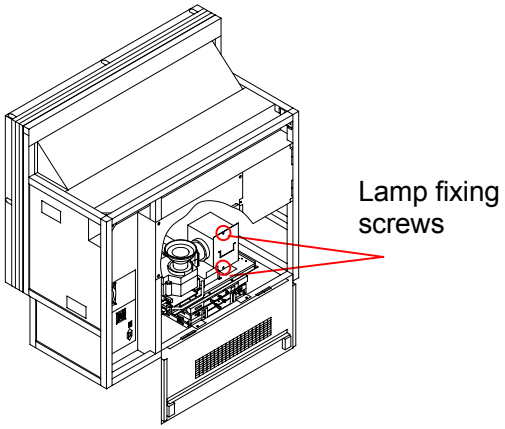
1.10.2.1. For VS-50XL20U and VS-67XL20U

1. Turn off the main power switch and unplug the power cord from the wall outlet.
   - Wait at least one hour for the lamp cooling down.

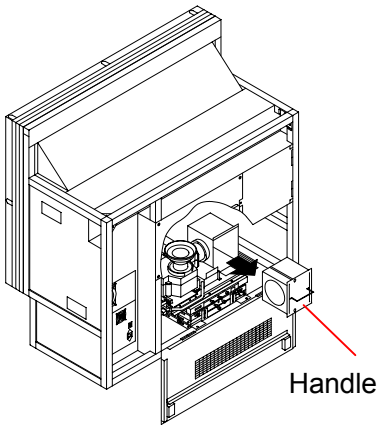
2. Hold the handles by the fingers and pull the lower door open.



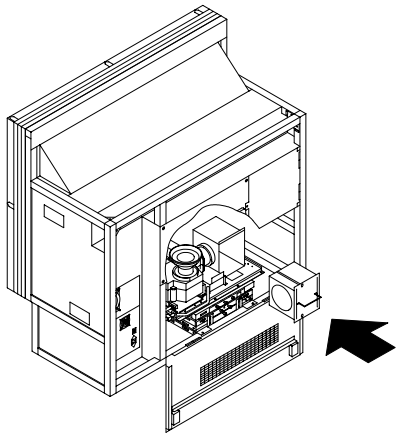
3. Loosen the two lamp fixing screws.



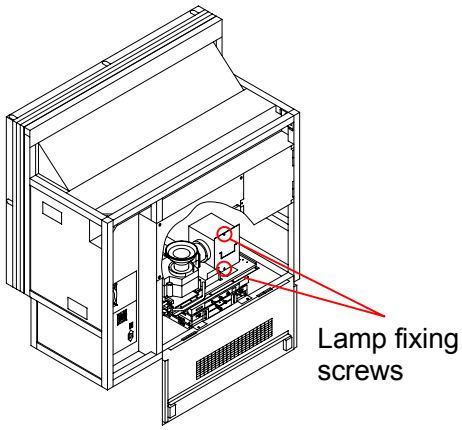
4. Hold the handle and pull out the lamp.
   - Be sure to grip the handle with one hand and hold the lamp with the other hand to pull it out safely.
   - Do not touch the glass envelope of the lamp. It may burn you.



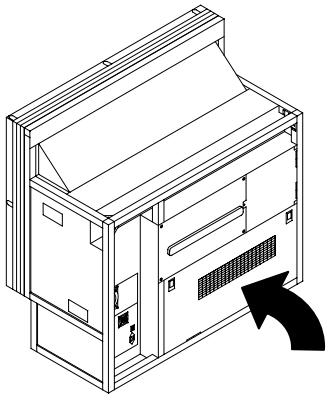
5. Insert a new lamp into the lamp chamber to the end.
   - Do not touch the glass envelope of the lamp with your fingers. The oil on your fingers may cause damage or explosion of the lamp.
   - Be sure to grip the handle with one hand and hold the lamp with the other hand to insert it safely. Be careful not to pinch your hand in the lamp chamber.



6. Tighten the two lamp fixing screws.



7. Close the lower door.

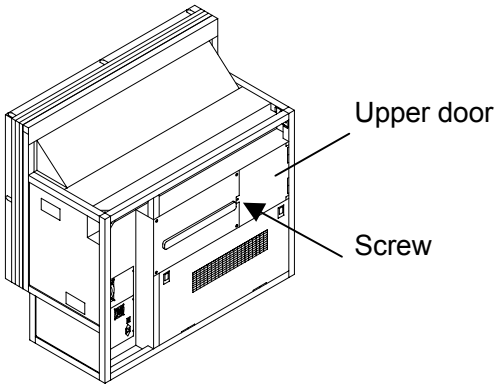


8. After the replacement, perform “Condenser lens adjustment” (chapter 1.11, on page 62), “Color balance adjustment” (chapter 1.5.4, on page 26) or “Picture outline adjustment” (chapter 1.4, on page 14) as needed.
   - You don’t have to reset the lamp timer value since the lamp operating time is automatically updated when lamp is replaced. As needed, you can reset it manually in LAMP TIMER RESET in MAINTENANCE in the system menu.
   - If TERGET COLOR (chapter 1.5.4.6, on page 28) is set, the optimum color is adjusted automatically after lamp replacement.
   - If SENSOR (chapter 1.5.4.7, on page 29) is set RUN, the brightness is automatically adjusted to be uniform across a multi-screen.

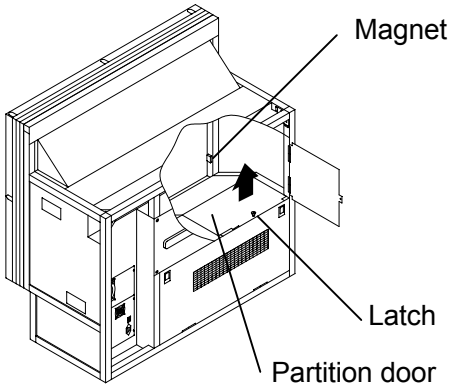
1.10.2.2. For VS-50XLW20U

1. Turn off the main power switch and unplug the power cord from the wall outlet.
   - Wait at least one hour for the lamp cooling down.

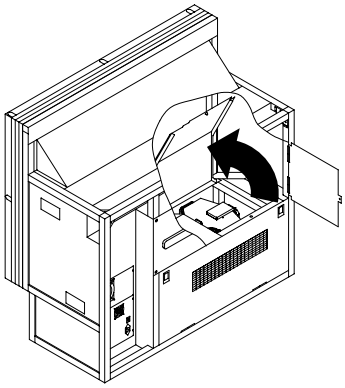
2. Loosen the screw in upper door to open.



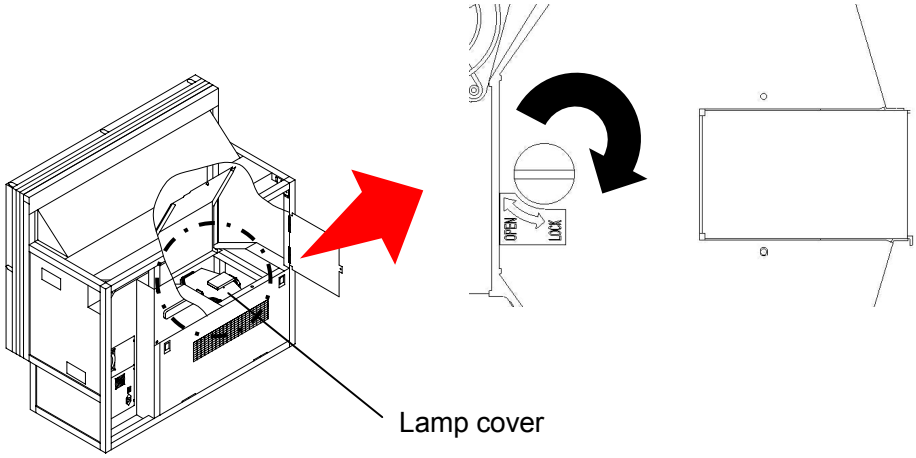
3. Lift up the latch in the partition door.



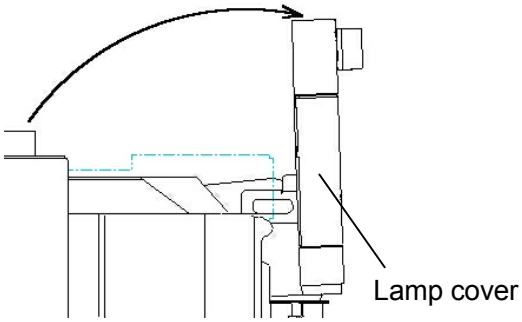
4. Open the partition door and fix it on the magnet.



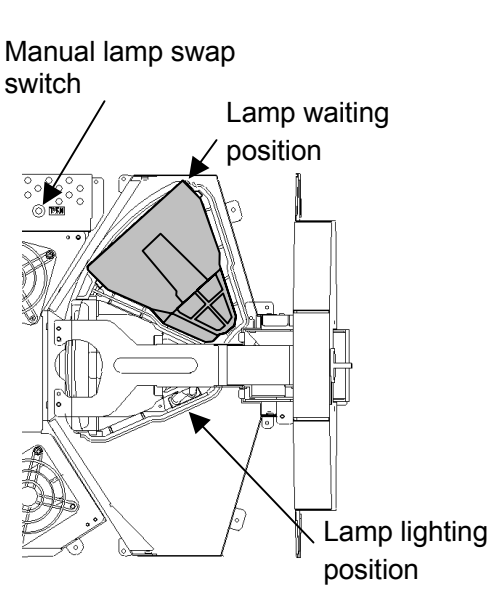
5. To unlock the lamp cover in the right side of the optical engine, turn the knob clockwise.

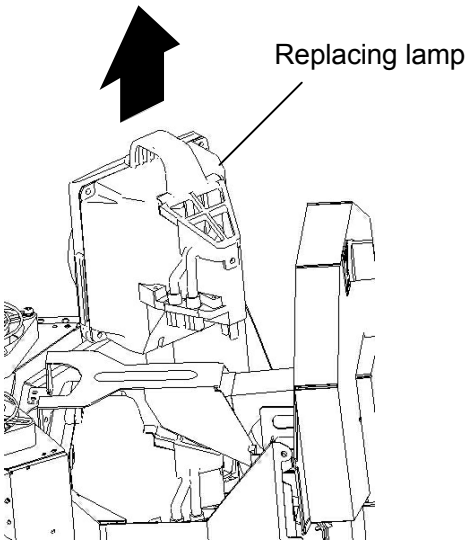


6. Open the lamp cover.

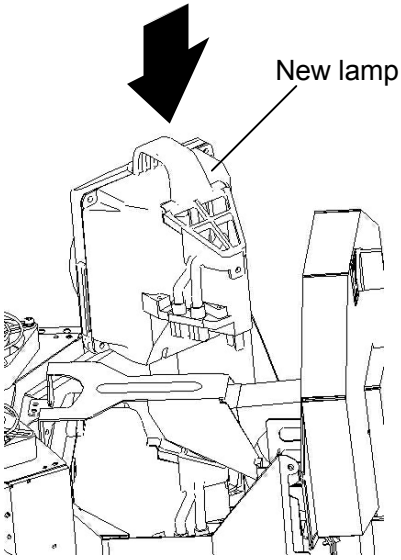


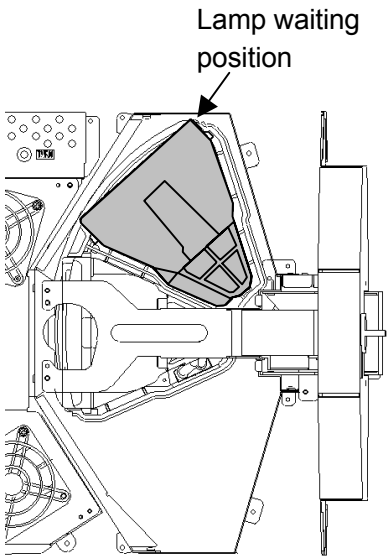
7. Pull out the spare lamp from the lamp waiting position.
   - Pull out the lamp vertically. Rough treatment may cause damage.
   - If you replace the lamp in lighting position, perform manual lamp swap in the state of the lamp cover closing.
   - Do not touch the glass envelope of the lamp. It may burn you.



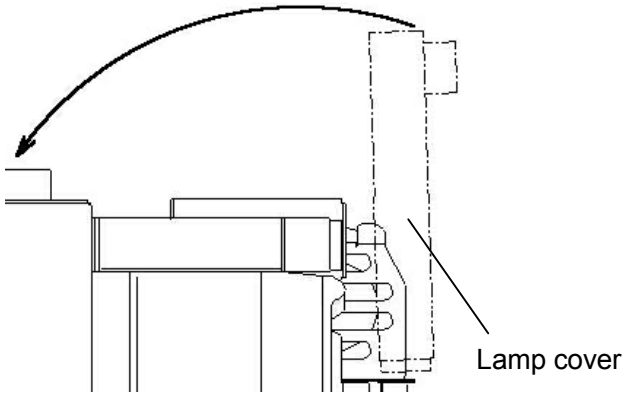


8. Insert a new lamp with correct direction to the end.
   - Insufficient inserting may cause damage.
   - Do not touch the glass envelope of the lamp with your fingers. The oil on your fingers may cause damage or explosion of the lamp.

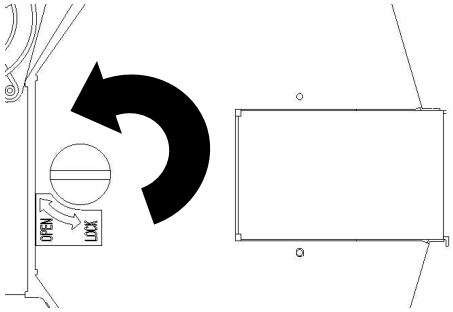




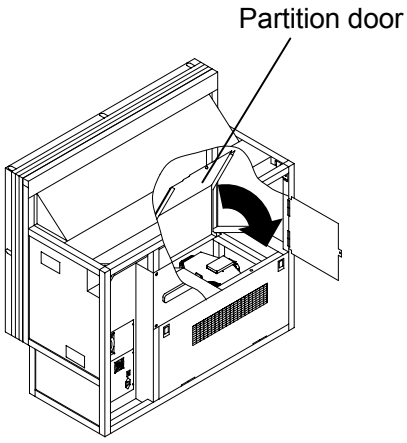
9. Close the lamp cover.



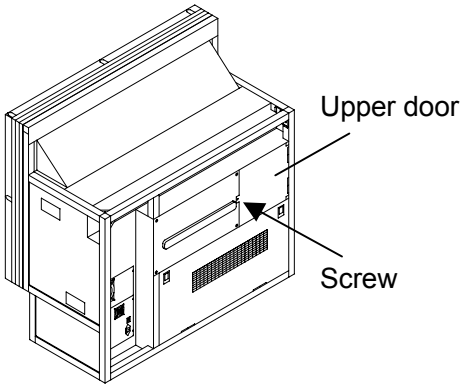
10. Lock the lamp cover.
    - If you neglect to lock it, the lamp changer may not work correctly.



11. Close the partition door.
    - Push the latch till click.



12. Close the upper door by tightening the screw that has loosened in the step 2.



13. After the replacement, perform “Color balance adjustment” (chapter 1.5.4, on page 26), “Picture outline adjustment” (chapter 1.4, on page 14) as needed.
    - To turn on the lamp in the waiting position, perform manual lamp swap in the state of the lamp cover closing.
    - You don’t have to reset the lamp timer value since the lamp operating time is automatically updated when lamp is replaced. As needed, you can reset it manually in LAMP TIMER RESET in MAINTENANCE in the system menu.
    - If TERGET COLOR (chapter 1.5.4.6, on page 28) is set, the optimum color is adjusted automatically after lamp replacement.
    - If SENSOR (chapter 1.5.4.7, on page 29) is set RUN, the brightness is automatically adjusted to be uniform across a multi-screen.

1.10.3. Auto-lamp changing function (for VS-50XLW20U)

VS-50XLW20U is equipped with auto-lamp changing function that can detect the lamp failure or brightness deterioration and then swaps it for spare lamp automatically.

The lamp is managed as three types of status, “NEW”, “USED” and “JUNK”. It is displayed on screen by [DISPLAY] button.

- NEW: New or not-deteriorated lamp
- USED: Deteriorated lamp
- JUNK: Failed lamp

1.10.3.1. Action in lamp failure (burnout or explosion)

The lamp changer can detect the lamp failure and swaps it for spare lamp automatically.

1. When it detects the lamp failure, the lamp status is automatically recognized as “JUNK” and memorized in the lamp memory.
2. If the status of spare lamp is “NEW” or “USED”, the auto-lamp changing starts. “☀” mark starts blinking on the screen to induce to replace the spare lamp. You can select no indication setting (chapter 1.5.3.11, on page 24).
3. If the spare lamp status is “JUNK”, the projector tries to ignite current lamp once without auto-lamp changing. If it succeeds to ignite, it continues to work. Otherwise, the status indicator shows error code, “1.” (chapter 2.4, on page 70).

   Even if the status is “JUNK”, in the case that turning off/on has been performed during this status, auto-lamp changing starts. If it succeeds to ignite, it continues to work. Otherwise, the status indicator shows error code, “1.”.

1.10.3.2. Action in brightness deterioration

When the luminous sensor detects the brightness deterioration, the lamp changer swaps it for spare lamp automatically. You can set three types of starting condition of auto-lamp changing, NORMAL (50% of initial brightness), LONG (30% of initial brightness) or OFF (no swap due to brightness deterioration) (chapter 1.5.3.14, on page 25). You can display the pre-announcement of auto-lamp changing on screen (chapter 1.5.3.11, on page 24).

The initial brightness is automatically read 5 minutes after the auto-lamp changing. If you turn off the power during auto-lamp changing, the initial value will be read in the same way when you will turn on again.

1. When it detects brightness deterioration according to the luminous sensor, the lamp status is automatically recognized as “USED” and memorized in the lamp memory.
2. If the status of spare lamp is “NEW”, the pre-announcement of auto-lamp changing is displayed on screen and auto-lamp changing starts 5 minutes later. “☀” mark starts blinking on the screen to induce to replace the spare lamp. You can select no indication setting (chapter 1.5.3.11, on page 24).

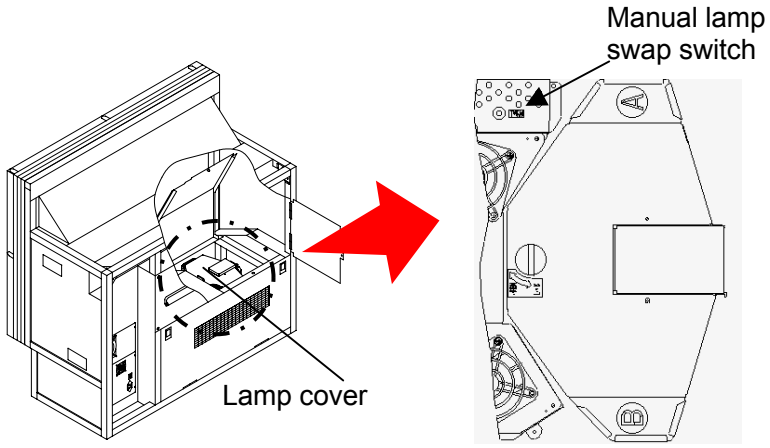
   If the spare lamp status is “USED” or “JUNK”, the auto-lamp changing doesn’t work.

1.10.4. Action in manual lamp swap (for VS-50XLW20U)

Regardless of lamp failure or brightness deterioration, you can swap lamps compulsorily. During the swap, the lamp cover must be closed.

1.10.4.1. At lamp lighting

1. Push manual lamp swap switch in the lamp changer or press [INPUT B], [ESC] and [2-digit remote ID number] buttons in remote control consecutively. When the ID is 01, press [INPUT B], [ESC], [0] and [1]. Pressing [INPUT B], [ESC], [0] and [0] swaps lamps regardless of remote ID setting.



2. The current lamp is turned off.
3. The current lamp is swapped with spare lamp.
4. The new lamp is turned on.

1.10.4.2. At stand-by mode

1. Push the manual lamp swap switch in the lamp changer or press [INPUT B], [ESC] and [2-digit remote ID number] buttons in remote control consecutively.
2. The power is turned on automatically.
3. The current lamp is swapped with spare lamp.
4. The projector is turned off and goes back to stand-by mode.

1.10.5. Lamp position auto calibration (for VS-50XLW20U)

VS-50XLW20U has the function that can automatically adjust the lamp to the suitable position to maximize the brightness.

It performs the auto calibration 5 minutes after the lamp swap. Once calibrated, the result is automatically saved in the optical engine and it will not be re-calibrated until next swap is detected.

For instance, the projector calibrates the lamp position 5 minutes after the turning on a different lamp from previous one, and also 5 minutes after the auto-lamp changing. If you turn on the power to ignite the same lamp, the auto calibration will not be performed since the lamp position is automatically set according to the memorized result.

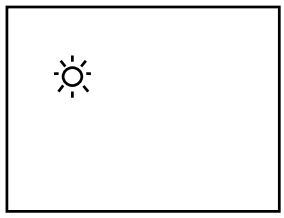
1.10.6. Warning indication (for VS-50XLW20U)

You can indicate the warning mark to induce to replace the spare lamp and the pre-announcement of auto-lamp changing on screen. It can be set in WARNING menu in INDICATION in the system menu (chapter 1.5.3.11, on page 24).

[Warning mark to induce to replace the spare lamp]

"☼" mark is displayed on screen when the spare lamp is required to replace after the auto-lamp changing (in other word, when the spare lamp status is "USED", "JUNK" or no attaching). It blinks once in 5 seconds.

The mark will disappear when the spare lamp is replaced to "NEW" (new or not-deteriorated lamp). Even if the spare lamp status is not "NEW", you can erase the indication by resetting the spare lamp operating time (on page 58).



[Pre-announcement of auto-lamp changing]

The message shows when the brightness deterioration is detected. The auto-lamp changing starts after 5-minute displaying.

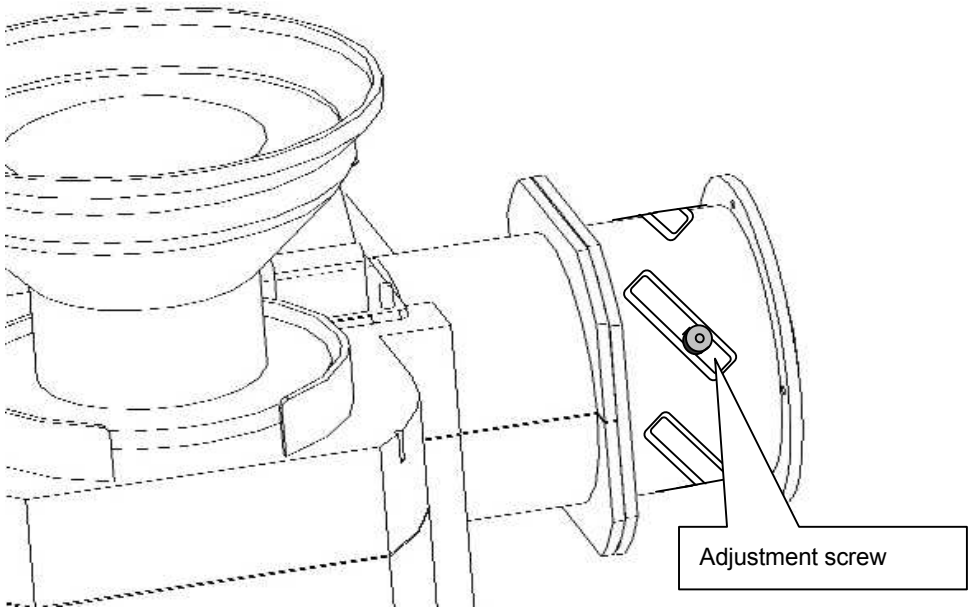
1.11. Condenser lens adjustment (for VS-50XL20U and VS-67XL20U)

When the brightness is low after lamp replacement, the brightness may increase if you adjust the position of the condenser lens.

You don't have to adjust it at initial setting since the position has been adjusted optimally with built-in lamp at factory.

[Procedure]

1. After turning on the main power, wait until the brightness becomes stable (about three minutes).
2. Open the lower door and upper door in the rear of the projector.
3. If the WHITE BOOST (chapter 1.5.5.9, on page 32) is set other than OFF, change the setting OFF in WHITE BOOST in MISC FUNCTION in the system menu.
4. Display any internal test pattern except "full-bit white" by [TEST] button.
5. Press and hold [DISPLAY] button in advanced mode to display the status information. The luminous sensor value is indicated in the lowest line, L.SENSOR.
6. Loosen the adjustment screw on the optical engine described below by Allen wrench (2.5mm).
7. Move the screw position along the flute to maximize the luminous sensor value and fix it.
   Note: Do not tighten it with excessive torque (suggested torque: $0.38Nm^{+/-0.03}$). Also fix it not to misalign the position.
8. Set back the WHITE BOOST setting.
9. Set back the lower door and upper door.



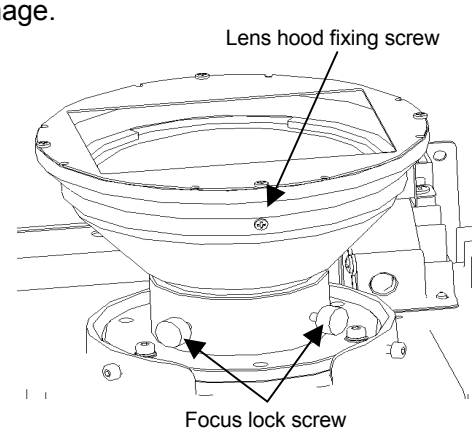
1.12. Focus adjustment

This adjustment is normally unnecessary.

You can adjust the lens focus when it is soft.

[Procedure]

1. Display the crosshatch pattern by pressing [TEST] button twice.
2. Open the lower door and rear panel in the rear of the projector.
3. Detach the band that fixes the lens and accordion hose.
4. Loosen the lens hood fixing screw.
5. Loosen the two focus lock screws.
6. Turn the lens to focus clearly on the center of the screen.
7. Turn the lens hood to align the position not to shade the image.
8. Turn the lens to adjust the focus with balance on the whole screen.
9. Turn the lens hood to align the position not to shade the image again.
10. Fix the focus lock screws (suggested torque: $0.38Nm^{+/-0.03}$). Be careful not to stress too much on the lens.
11. Fix the lens hood fixing screw (suggested torque: $0.15Nm^{+/-0.02}$).
12. Set back the accordion hose and tighten the fixing band.
13. Set back the lower door and rear panel.
14. Finish.



1.13. For delivery

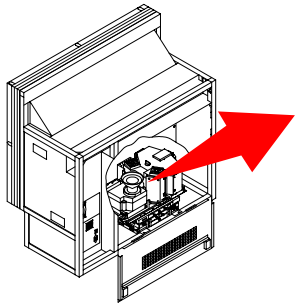
Before shipment, be sure to fix the 6-axis adjuster and perform the color wheel locking. Also for VS-50XLW20U, be sure to insert the lamp cushion. Shipping the product without locking and inserting the cushion may cause breakage.

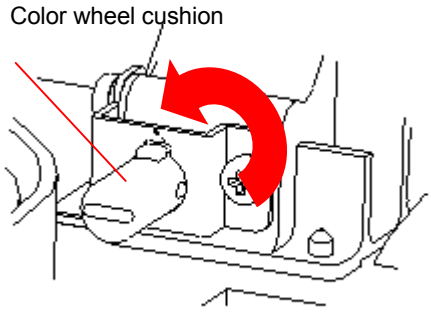
1.13.1. 6-axis adjuster fixing

Fix the 5 fixing screws and 4 lock screws with referring to “1.4.6 Fixing the adjuster” on page 16.

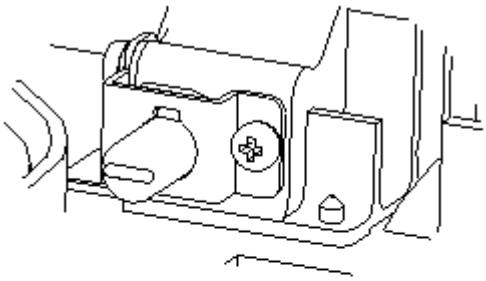
1.13.2. Color wheel locking

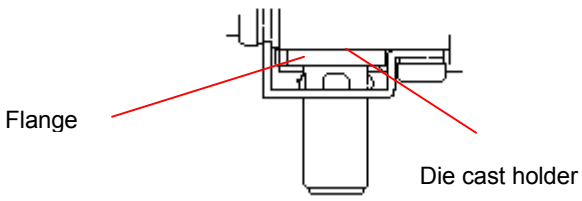
1. Turn the color wheel cushion 90 degrees counter clockwise.
   - For VS-50XLW20U, pliers are recommended to use since it is hard to access with fingers.





2. Push the color wheel cushion all the way in till the flange of it touches the die cast holder.

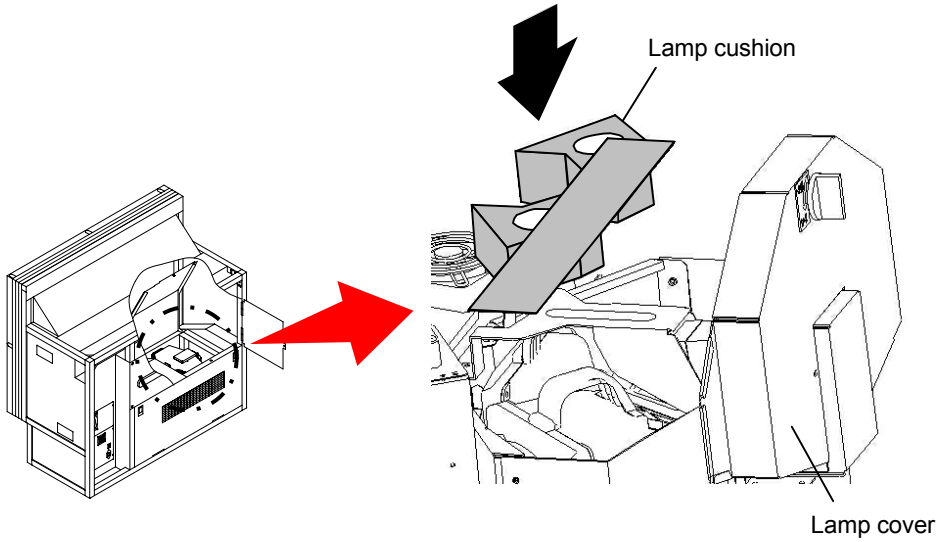


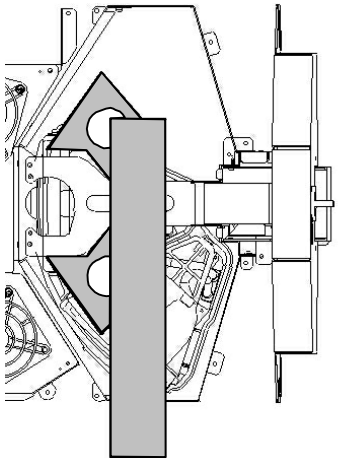


1.13.3. Lamp cushion inserting (for VS-50XLW20U)

Before shipment, be sure to insert the lamp cushion into the designated place. Shipping the product without inserting may cause breakage.

- Be care about inserting direction of the cushion.
- It should be remembered to lock the lamp cover after inserting. If you neglect to lock it, it may cause damage.





<Cushion inserting place>

2. Function

2.1. Memories

The memories are classified under 4 categories.

Memory	Description
Default memory	It is the preset memory and not adjustable. Supported input signal list etc. corresponds to it.
System memory	It stores all adjustment items except input memory, display memory and default memory. It is automatically saved when you change values and exit the menu.
Input memory	It stores the setting of each input signal. The number of memories is 128. It can be saved in the menu 1. All items in the menu 1 are saved in the input memory. It can be called and deleted in INPUT MEMORY in the [MEM LIST] menu.
Display memory	It stores the setting of each display pattern. The number of memories is 256. All items in the menu 2 (short press) are saved in the display memory. It can be called and deleted in DISPLAY MEMORY in the [MEM LIST] menu.

The automatic input signal scanning function scans the memory in order of the input memory and default memory.

2.2. Menu list

This product has the following menus.

- Menu 1: for input memory setting
- Menu 2 (short press): for display memory setting
- Menu 2 (press-and-hold): for system memory setting

2.2.1. Menu 1

Menu 1 consists of “common items”, which is displayed with all signal inputs and “additional items”, which is additionally displayed depending on the input signal.

In the following tables, the items within parentheses are initial values.

(*1) This mark means that the item is displayed when the input board is attached and it can be selective when the input signal via the input board is selected.

2.2.1.1. Common items

Item	In main unit	In input board	Description	Page
H.POSITION	0 – 500	0 – 1920	Input signal horizontal position setting	34, 40
V.POSITION	0 – 100	0 – 1200	Input signal vertical position setting	
H.SIZE	–	600 – 2000	Input signal effective horizontal size setting (*1)	40
V.SIZE	–	350 – 1300	Input signal effective vertical size setting (*1)	
FRAME LOCK	–	ON, OFF (OFF)	Frame lock setting (*1)	41
SCAN MODE	–	INTERLACE	Interlace signal setting (*1)	41
		F-INVERT	ODD/EVEN setting (*1)	
SIGNAL SELECT			Input signal selecting (when main unit, COMPOSITE or Y/C input)	33, 39
CONTRAST	0 – 150 (100)		Contrast setting	36, 44
BRIGHTNESS	-50 – 50 (0)		Brightness setting	36, 44
COLOR MATRIX	OFF, VIDEO, COMPUTER, USER (OFF)		Color matrix setting	36, 44
APERTURE	OFF, 1, 2, 3, 4 (OFF)		Edge enhancement setting	36, 44
ASPECT-RATIO	–	4:3, 5:4, 16:9	Aspect ratio setting (*1)	44
SCALING FILTER	0, 1 (1)	0, 1, 2 (1)	Scaling filter setting	36, 45

2.2.1.2. Additional items (When ANALOG or S.ANALOG is selected)

Item	In main unit	In input board	Description	Page
H.TOTAL	700 – 1900	700 – 2300	Sampling number setting	34, 39
FINE	-16 – 15 (0)	-32 – 31 (0)	Sampling phase setting	34, 41
CLAMP START	0 – 15 (0)	0 – 255 (0)	Clamp start position setting	34, 42
CLAMP WIDTH	0 – 15 (0)	0 – 30 (0)	Clamp width setting	
MASK START	–	-32 – 0 (-1)	Vertical sync mask start position setting (*1)	42
MASK END	–	0 – 31 (1)	Vertical sync mask end position setting (*1)	
SYNC SELECT	AUTO, HD/VD, SOG		Sync signal selecting	34, 42
CLOCK RANGE	1 – 8	5 – 18	Sampling clock range setting	35, 43
AMP GAIN	AUTO GAIN		Analog input gain setting	35, 43
	MANUAL GAIN			
SIGNAL-TYPE	–	RGB, YUV	Analog signal type setting (*1)	39

2.2.1.3. Additional items (When S.DIGITAL is selected)

Item	In main unit	In input board	Description	Page
SIGNAL-TYPE	–	RGB, YUV	Digital signal type setting	39

2.2.1.4. Additional items (When COMPOSITE or Y/C is selected)

Item	In main unit	In input board	Description	Page
COLOR	–	-8 – 8 (0)	Color depth setting	45
TINT	–	-8 – 8 (0)	Hue of image setting	45
SHARPNESS	–	-8 – 8 (0)	Image sharpness setting	45
VCR MODE	–	ON, OFF	VCR mode setting	45

2.2.2. Menu 2 (short press)

In the following tables, the items within parentheses are initial values.

(*1) This mark means that the item is displayed when the input board is attached and it can be selective when the input signal via the input board is selected.

Item	In main unit	In input board		Description	Page
INPUT MEMORY	–	1 – 128.UNDEFINED		Referred input memory selecting (*1)	47
H.DISPLAY POS	–	1/1 – 32/32 (1/1)		Horizontal expansion ratio setting (*1)	47
V.DISPLAY POS	–	1/1 – 32/32 (1/1)		Vertical expansion ratio setting (*1)	
CROP	–	H.POSITION	0 – 1919 (0)	Crop adjustment (*1)	47
		V.POSITION	-17 – 767 (0)		
		H.SIZE	1 – 1072 (1024)		
		V.SIZE	1 – 1200 (768)		
DISPLAY	–	H.POSITION	-24 – 1023 (0)	Display adjustment (*1)	48
		V.POSITION	-17 – 767 (0)		
		H.SIZE	1 – 1072 (1024)		
		V.SIZE	1 – 802 (768)		
DIGITAL OUT	–	DISABLE, SCREEN, 1 – 128 (SCREEN)		Digital output setting (*1)	48
SCREEN MODE	–	NORMAL, TRIMMING, FULL (NORMAL)		Referred aspect ratio setting (*1)	49

2.2.3. Menu 2 (press-and-hold)

The items within parentheses are initial values.

(*1) This mark means that the item is displayed when the input board is attached and it can be selected when the input signal via the input board is selected.

(*2) GRADATION has the same adjustment items in WHITE, RED, GREEN and BLUE each.

Item				Description	Page
MAINTENANCE	CSC	OFF, 1, 2 (OFF)		CSC adjustment	26
	TAGET COLOR	SET TARGET COLOR		Auto CSC target setting	28
	SENSOR	SENSOR	OFF, STOP, RUN (OFF)	Auto brightness correction setting	29
		SET INITIAL SENSOR DATA			
	GRADATION (*2) WHITE, RED, GREEN, BLUE	TOP	-128 – 127 (0)	Gradation adjustment	28
		BOTTOM	-128 – 127 (0)		
		LEFT	-128 – 127 (0)		
		RIGHT	-128 – 127 (0)		
		TOP/LEFT	-128 – 127 (0)		
		TOP/RIGHT	-128 – 127 (0)		
		BOTTOM/LEFT	-128 – 127 (0)		
		BOTTOM/RIGHT	-128 – 127 (0)		
	LAMP CHANGE (For VS-50XLW20U)	CALIBRATION		Lamp position auto calibration	25
		CHANGE MODE	OFF, NORMAL, LONG (LONG)	Brightness setting for lamp replacement	25
	MECH ALIGNMENT			(No use)	–
	LAMP TIMER RESET			Lamp operating time resetting	54
INSTALLATION	BLACK LEVEL	R-LEVEL	0 – 127 (0)	Black level adjustment	26
		G-LEVEL	0 – 127 (0)		
		B-LEVEL	0 – 127 (0)		
	WHITE BALANCE	LOW, MIDDLE, HIGH (MIDDLE)		White balance adjustment	27
	COLOR MATRIX:USER	RED	-20 – 20 (0)	Color matrix adjustment	30
		YELLOW	-20 – 20 (0)		
		GREEN	-20 – 20 (0)		
		CYAN	-20 – 20 (0)		
		BLUE	-20 – 20 (0)		
		MAGENTA	-20 – 20 (0)		
		SATURATION	-5 – 5 (0)		
	AMP GAIN	AUTO GAIN		Analog input gain setting (When main unit input)	30
		MANUAL GAIN			
	SCALER AMP GAIN	AUTO GAIN		Analog input gain setting (*1)	31
		MANUAL GAIN			
MISC FUNCTION	LAMP POWER	NORMAL, BRIGHT (NORMAL)		Lamp brightness setting	21
	LAMP MODE	LONG LIFE, NORMAL, F-REDUCTION (F-REDUCTION)		Lamp driving mode setting	21
	TERMINATE	75, 1K (1K)		Termination setting (When main unit input)	21
	S.TERMINATE	75, 1K (1K)		Termination setting (*1)	22
	ADV.COL	ON, OFF (ON)		Advanced color setting	31
	ADV.DARK	ON, OFF (OFF)		Advanced dark setting	31

(Continued)

Item				Description	Page
MISC FUNCTION	GAMMA	1 – 5 (1)		Gamma setting	31
	DITHER	ON, OFF (ON)		Dither setting	31
	3D Y/C	ON, OFF (ON)		3D Y/C setting (When input board, VC-B20KV is attached)	32
	START MEMORY	OFF, 1 – 256 (OFF)		Display memory at start-up setting. In the case of OFF, it is last loaded memory.	22
	OVERLAP	ON, OFF (OFF)		Overlap setting (*1)	22
	OFFSET	H.POSITION	-16 – 16 (0)	Electrical image position fine adjustment (*1)	23
		V.POSITION	-16 – 16 (0)		
		H.SIZE	-16 – 16 (0)	Electrical image size fine adjustment (*1)	
		V.SIZE	-16 – 16 (0)		
	BAUD RATE	9600, 19200 (19200)		Transmission speed setting	23
	SYSTEM SYNC	60, 50 (60)		50/60Hz mode setting	23
	IMAGE FLIP	N/E, N/W, S/E, S/W (N/E)		Image flip setting	23
	INDICATION	WARNING (For VS-50XLW20U)	MESSAGE ☀, ☀, OFF (MESSAGE ☀)	Message indication setting	24
		STANDBY	LED, OFF (LED)		
		ERROR	LED, OFF (LED)		
		BLOWOUT	LED, OFF (LED)		
	WHITE BOOST	OFF, 1 – 10 (OFF)		White boost setting	32
	AUTO POWER ON	ON, OFF (OFF)		Auto power on setting	25
	BLOWOUT	OPERATE, SHUTDOWN (OPERATE)		Lamp blowout mode setting	25

2.2.4. MEMLIST

(*1) This mark means that the item is displayed when the input board is attached and it can be selected when the input signal via the input board is selected.

Item			Description	Page
MEMORY CALL	INPUT MEMORY	INPUT MEMORY	Input memory calling	37, 46
		DELETE MEMORY	Input memory deleting	
	DISPLAY MEMORY	DISPLAY MEMORY	Display memory calling (*1)	49
		DELETE MEMORY	Display memory deleting (*1)	

2.3. Test pattern list

Every pressing [TEST] button rounds to select the test pattern in the following order.

Full-bit white – Crosshatch – Adjustment white – Gradation – Color bar – Test pattern OFF – (Full-bit white)

Pattern	Description	Case of use
Full-bit white	Any picture adjusting except gamma compensation becomes invalid. All RGB-GAIN values in BLACK LEVEL become 0 at full black. [R], [G] and [B] buttons can turn ON/OFF each color.	
Crosshatch	[R], [G] and [B] buttons can turn ON/OFF each color.	Total adjusting for multi-screen
Adjustment white	[R], [G] and [B] buttons can turn ON/OFF each color.	Menu 2: CSC Menu 2: GRADATION
Gradation	All picture adjusting becomes invalid.	
Color bar		Menu 2: CSC

2.4. LED display

This product indicates the current status on “Status indicator” in the control panel and “Warning LED” that lights blue on the screen.

- Warning LED indication can be set in INDICATION menu (chapter 1.5.3.11, on page 24). You can erase the indication by [ESC] button in remote control during LED lighting. [DISPLAY] button can restore the setting. This LED turning off setting by remote control is effective until the main power switch is shut down.
- The status indicator shows the lamp operating time with 5-digit blinking figure if you press [DISPLAY] button during power on or stand-by state.

Warning LED
(Blue light on the right center of the screen)

LED display list

Status	Warning LED	Status indicator	Reading	Memo
System initializing	Off	8.	8.	The last error indication can be restored even if you turn off the main power switch.
Stand-by state	On	.	. (Dot)	After automatic shutdown, the last error indication is retained in stand-by state
Start-up processing	Off	1 2 3 4 5	12345	It counts up according to the process. Error status is cleared and re-checked.
In-service (normal state)	Off		(None)	
No signal	Off	-	- (Bar at center)	
Shutdown processing	Off	.	. (Blinking dot)	
Incorrect lamp attachment or lamp door open	Light on 1 sec. off 1 sec.	4.	4.	Just after detecting the failure, it turns off automatically and enters stand-by state.
Lamp failure or lamp burnout		1.	1.	During retrying, the status indicator blinks. It automatically goes to the lamp blowout mode.
Fan failure	Light on 1 sec. off 5 sec.	0. 1 0. 2 0. 3 0. 4 0. 5	0. (Zero)	During warning and shutdown processing, “0” and the number that specifies defective fan appear alternately. 30 seconds after detecting the failure, it automatically turns off and retries once. Then it enters stand-by state.
Power failure		7.	7.	30 seconds after detecting the failure, it automatically turns off and retries once. Then it enters stand-by state.
Color wheel failure Lamp changer mechanical failure(For VS-50XLW20U)	Light on 5 sec. off 1 sec.	5.	5.	
Lamp power circuit failure (For VS-50XLW20U)	Off	9.	9.	When the failure is detected, it automatically turns off after cooling down, and retries once. Then it enters stand-by state.
Firmware writing	Off		(None)	When you overwrite the firmware, set dipswitch no. 2 OFF to change firmware writing mode. After writing, set back the switch and turn on the main switch again.

No.	Defective fan
1	Chassis cooling fan
2	Cube cooling fan
3	DMD™ chip cooling fan
4	Lamp cooling fan
5	Lamp power cooling fan

* The real error number shows continuously. Ignore numbers that appear only briefly.
* An error code many not indicate the primary cause. It may detect a secondary failure.

2.5. Cleaning

Screen front surface

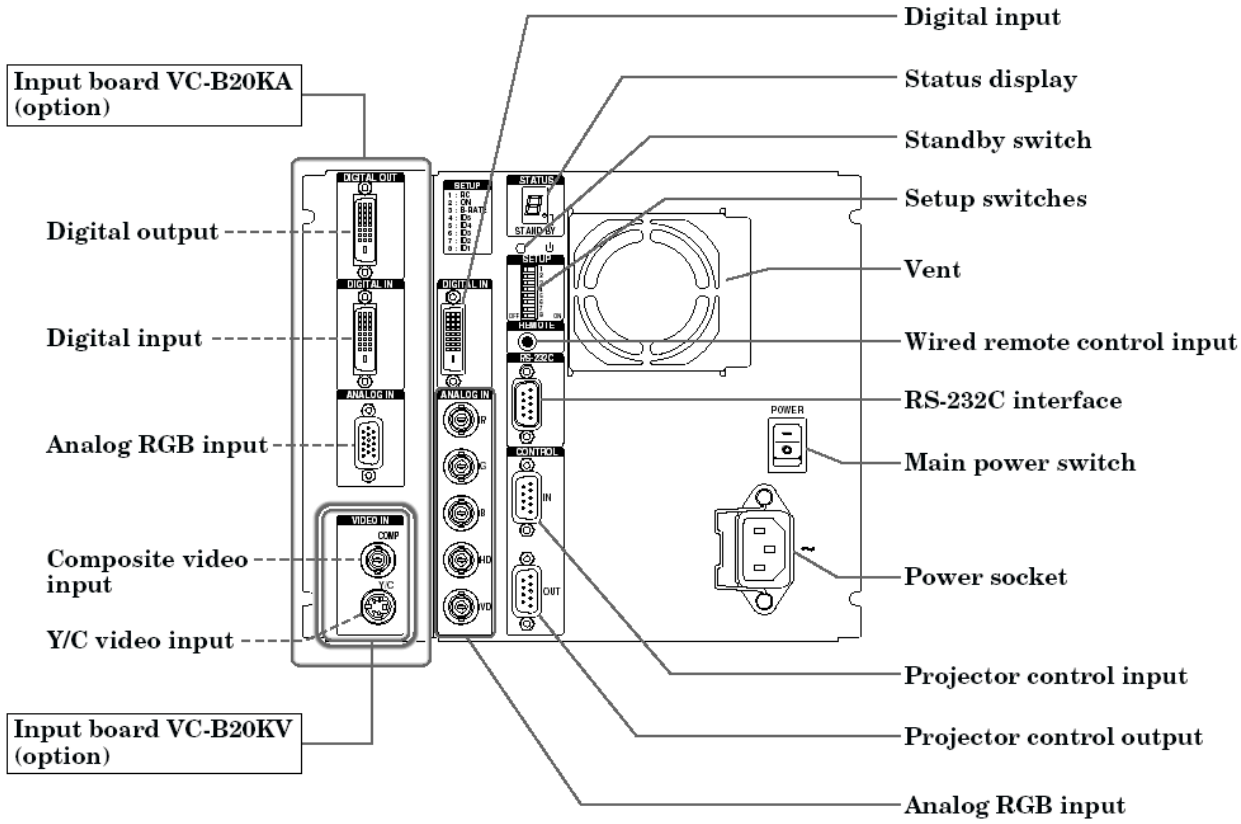
Wipe with a lint free soft and dry cloth or with a damp cloth with water or alcohol. Do not use solvents including acid or alkali integrant or abrasive. Do not scrub hard with dry hard cloth.

Cleaning the cabinet

Wipe with a lint free soft and dry cloth or if necessary with a damp cloth. Then add the finish the cleaning with a dry cloth.

Do not use solvents like thinner or benzene. It may cause degeneration or peeling off a coat.

2.6. Control panel

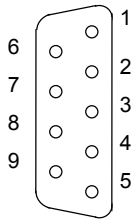


2.7. Terminal functions

2.7.1. RS-232C terminal

- Connector: D-sub 9 pins male
- Cable: Commercially available cross cables can be used to connect with external controller.
- Pin assignment:

Pin No.	I/O	Signal
1	–	N.C.
2	Input	RD (Receive Data)
3	Output	SD (Send Data)
4	Output	ER (Equipment Ready)
5	–	SG (Signal Ground)
6	Input	DR (Data Set Ready)
7	–	N.C.
8	–	N.C.
9	–	N.C.

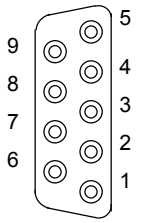


RS-232C port

2.7.2. CONTROL terminal

- Connector: D-sub 9 pins female (both IN and OUT)
- Cable: Supplied control cables (D-sub 9 pins male and male) should be used to connect between projectors.
- Pin assignment:

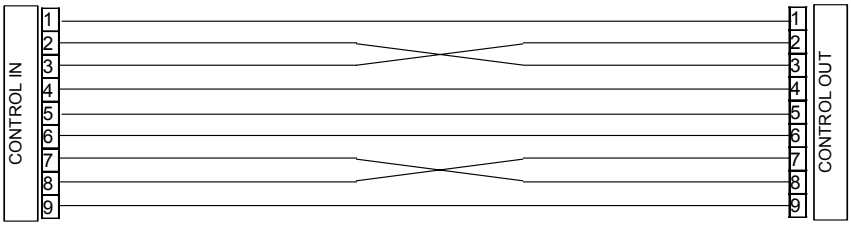
Pin No.	I/O		Signal	
	IN	OUT	IN	OUT
1	Input	Output	EXVIN	EXVOUT
2	Output	Output	TXDS2	TXDM2
3	Input	Input	RXDS2	RXDM2
4	Output	Input	GND	GND
5	Input/ output	Input/ output	UP/BUSY	UP/BUSY
6	Input	Output	RCIN	RCOUT
7	Output	Output	TXDS2	TXDM2
8	Input	Input	RXDS2	RXDM2
9	Output	NC	DE1	NC



CONTROL IN/OUT port

Note: The CONTROL terminal pin assignment is different from conventional one.

- CONTROL cable connection diagram



2.8. Supported signal list (When the input board is selected)

RGB signal

Computer/signal	Resolution	Line rate (kHz)	Frame rate (Hz)
IBM PC/AT compatible	640 x 400	37.9	84.1
	640 x 400	31.5	70.1
	640 x 400	37.9	85.1
	640 x 480*2	31.5	60.0
	640 x 480	37.9	72.8
	640 x 480	37.5	75.0
	640 x 480	43.3	85.0
	800 x 600	35.2	56.3
	800 x 600	37.9	60.3
	800 x 600	46.9	75.0
	800 x 600	48.1	72.2
	800 x 600	53.7	85.1
	1024 x 768	48.4	60.0
	1024 x 768	56.5	70.1
	1024 x 768	60.0	75.0
	1024 x 768	68.7	85.0
	1152 x 864	63.9	70.0
	1152 x 864	67.5	75.0
	1152 x 864	77.5	85.0
	1280 x 1024	63.9	60.0
	1280 x 1024	64.0	60.0
	1280 x 1024	75.1	71.2
	1280 x 1024	80.0	75.0
	1600 x 1200	75.0	60.0
Apple Macintosh	640 x 480	35.0	66.7
	832 x 624	49.7	74.5
	1024 x 768	60.2	74.9
	1152 x 870	68.6	75.0
	1280 x 1024	81.1	76.1
Sun	1280 x 1024	71.7	66.7
	1280 x 1024	81.1	76.1
SGI	1280 x 1024	76.9	72.3
	1280 x 1024	82.0	76.0
HP	1280 x 1024	78.1	72.0
HDTV(16:9) *1	1920 x 1080*4 *5	33.7	59.9

YC_BC_R(YP_BP_R) signal

Computer/signal	Resolution	Line rate (kHz)	Frame rate (Hz)
1125i / 1080i (16:9)*1	1920 x 1080*3 *4 *5	33.7	59.9
750p / 720p (16:9)	1280 x 720*4 *5	45.0	59.9
625p / 576p (4:3)	720 x 576*4 *5	31.3	50.0
525p / 480p (4:3)*2	720 x 480*4 *5	31.5	59.9

Note:

- The front porch width in input signal is required more than 12 pixels.
- Because the following pairs of signals have the same scanning frequencies, their signal formats may be selected incorrectly at the time of auto-scanning. When the signal format is wrong, the signal won't be displayed in correct colors. In such cases, press [NORMAL] button during the menu 1 displaying to select other signal format.
  *1: HDTV (16:9) format in RGB signal and 1125i/1080i (16:9) format in YC_BC_R(YP_BP_R) signal
  *2: 640x480 /60 Hz in RGB signal and 525p/480p (4:3) format in YC_BC_R(YP_BP_R) signal
- The following signals are processed as follows:
  *3: The signal undergoes under sampling at the specified resolution.
  *4: The signal is displayed with over scan.
  *5: This signal isn't supported when it is supplied to the DIGITAL IN connector.

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4. Revision archive

Description	Revision date
Issue first edition (REV1.1)	2003/07/04
• In chapter 1.5.4.7, change the procedure of “Color balance readjustment after SENSOR RUN”. • In chapter 2.2, add reference page in each menu item. • Separate “SYNC SELECT” from “CLAMP” as chapter 1.6.3.4. • In chapter 1.11, add the direction to set WHITE BOOST OFF before condenser lens adjustment. • In chapter 1.7.5.6, add the direction to set SCALING FILTER “0” when displaying high-resolution image. • In chapter 1.2.3, add the directions to turn off the main power switch and to stick the label. • In chapter 1.6.2, change the procedure of input signal selection. • In chapter 1.7.5.10, add VCR MODE menu.	2003/08/22 (REV 1.2)
• Add product line up, VS-50XLW20U. • In chapter 1.11, delete the direction to set SENSOR OFF before condenser lens adjustment. • Add chapter 2.7 “Terminal functions”. • Move “Connecting” to chapter 1.3. • In chapter 1.5.4.1, the value in WHITE BALANCE was “MIDDLE”. • In chapter 2.2.1.1, the range of H.SIZE and V.SIZE were “640 – 1920” and “350 – 1200”.	2003/10/10 (REV 1.4)